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THIS subject was chosen for discussion because, first, in the evolution of cerebral syphilis, widely different clinical pictures may be presented, giving rise to many difficulties in diagnosis, and, secondly, the disease can frequently be eradicated without leaving serious permanent disabilities if treatment is begun at an early stage and is sufficiently persistent. In cerebral syphilis the *Spirochæta pallida* has attacked mainly the meninges and blood-vessels. The neural tissues, however, rarely escape either direct invasion by the organism or local necrosis secondary to interference with blood supply; but encephalitis is superficial as compared with the deep and extensive process in dementia paralytica; hence the difference of the response to treatment. The pathological process may be limited throughout the course of the complaint to the intracranial contents, but usually the spinal cord, its roots or meninges are sooner or later also attacked.

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When dealing with nervous disorders it is a commonplace to mention the importance of inquiry as a routine into the patient's previous history in regard to venereal infections. In men the history of chancre with or without a subsequent rash or sore-throat is obtained in a large proportion of cases of cerebral syphilis. Sometimes gonorrhœa but not syphilis is admitted, and later the Wassermann reaction is found to be positive. This important fact should be remembered, for there is no doubt but that an unobtrusive chancre may run its course unnoticed when the local reaction to gonococcal invasion is severe. In women this part of the investigation is more difficult, for it is, of course, as a rule undesirable to ask direct questions on this subject; but even when this is done a negative history of primary or secondary lesions is usually obtained. If the woman is married an inquiry into the results of her pregnancies should never be omitted.

Symptoms of cerebral syphilis may appear within a few months or even weeks of the infection or may be delayed for years. The development of the disorder as revealed by the history of the patient's symptoms is of great diagnostic importance. No symptom of which he may complain is peculiar to cerebral syphilis, nor can the grouping of symptoms and signs at any phase in the malady be made the basis of a confident diagnosis. But when the patient relates a story in which, for example, paroxysmal severe headaches, attacks of giddiness, transient cranial-nerve palsies, or mental deterioration are prominent, and the clinical examination reveals signs of multiple cerebral lesions, there is presumptive evidence of cerebral syphilis. The diagnosis is more certain if he admits syphilitic infection, and is complete if the specific serological tests are found to be positive.

Common characteristics of cerebral syphilis might be categorically stated as follows: (1) Multiplicity of symptoms pointing to organic lesions; (2) their frequent transient nature; (3) the consequent changefulness of the clinical picture presented at different stages in the evolution of the disorder. These features, however, may be said to be equally characteristic of two other diseases of the central nervous system—namely, disseminated sclerosis and encephalitis lethargica. We will deal with their differential diagnosis as occasion arises.

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One of the almost constant early symptoms is headache. It is usually severe and may be described as throbbing and stabbing, and, at its height, often stupefying in its intensity. Although paroxysmal, each attack usually lasts for hours and may persist for days on end. The pain may be worst in some region of the head, but it is most commonly general and often associated with tenderness of the scalp as a whole. When the pain is circumscribed—for example, in the frontal, temporal, or occipital region—and is accompanied by a fan-shaped area of cutaneous tenderness spreading upward, it is generally due to involvement of the corresponding cutaneous nerves in a gumma of the skull or its coverings. Between the paroxysms the pain may disappear, but more commonly a dull ache persists. Too much has been made of nocturnal aggravation of the syphilitic headache. During attacks of severe pain the patient is frequently giddy and may vomit repeatedly, and sometimes he is found on examination to have either optic neuritis or papillœdema. The occurrence of these symptoms with or without other clinical manifestations raises the question of cerebral tumour. When cranial-nerve palsies are present without pupillary abnormalities the differential diagnosis between tumour of the basal membranes and syphilitic basilar meningitis often depends entirely on the results of examination of the blood and spinal fluid.

Cranial-Nerve Palsies.

Very few cases of syphilitic meningo-encephalitis run their course without involvement of one or more cranial nerves and, with affection of the basilar membranes, they tend to be attacked early. The palsies that result from these lesions are frequently transient, and throughout the course of an illness signs of damage to several cranial nerves may appear at one time or another and leave little or no permanent disability. Any cranial nerve may be attacked, but some are more commonly injured than others. Disorders of smell are not rare, and limitation of the visual fields on one or other side may be an early sign from invasion of the optic nerves, chiasma, or tracts. Papillœdema when present is usually bilateral, but optic neuritis may occur on one side only. Unilateral deafness is very common and may be associated with weakness of the facial muscles on the same side and pain and tenderness of the skin in the distribution of one or more divisions of the fifth nerve. But pupillary abnormalities, such as a fixed dilated pupil, ptosis, diplopia, or squint from lesions of the third or sixth cranial nerves, are most common of all. The fourth nerve is less often affected. These oculo-motor signs may be unilateral or bilateral and are often evanescent.

Of disorders of the pupil the Argyll Robertson phenomenon is the most diagnostic, but in regard to it a word of warning is necessary. First, it is less frequently found in cerebral syphilis than in tabes and dementia paralytica, and its absence should not necessarily be taken as evidence against a diagnosis of syphilitic infection. Secondly, although this sign is most often a manifestation of neurosyphilis it is not

pathognomonic of it. It signifies a lesion in a particular part of the mid-brain which, though usually syphilitic, is occasionally due to some other cause. For example, it sometimes occurs with tumour in this region, or with encephalitis lethargica. Thirdly, defective reaction of the pupils to light is as significant as complete absence of response. For example, the movement may be small, sluggish, or delayed and, in spite of continuous stimulation, contraction may be immediately followed by dilatation or to-and-fro movements of the pupil may go on. The diagnostic value of these latter abnormalities is enhanced if they are unilateral. Irregularity in outline or eccentricity of the pupil may also be met with.

Transient cranial-nerve palsies are as common in disseminated sclerosis as in cerebral syphilis, but pupillary changes and severe paroxysmal headaches are very rare in the former, and nystagmus is rare in the latter. When physical signs are present elsewhere they may aid the diagnosis, but many are common to the early stages of both conditions. Manifestations of root lesions, such as local atrophies, or pain and tenderness of radicular distribution, would strongly favour a diagnosis of syphilis. Often differentiation between the two disorders on clinical grounds only is extremely difficult, and must rest on serological tests.

Changes in pupillary reactions are common in encephalitis lethargica, but defective reactions on accommodation or convergence are perhaps most frequently found, although the Argyll Robertson phenomenon sometimes occurs. When in this disorder alterations in the reactions of the pupils are present, they are usually accompanied by lethargy or insomnia, a combination of symptoms which is by no means unknown in cerebral syphilis. Mild pyrexia may also occur in both, so that on clinical grounds only it is sometimes impossible to make a diagnosis. In such circumstances, examination of the blood and spinal fluid is of the greatest value.

MENTAL CHANGES.

Because of the striking nature of the mental alterations in dementia paralytica they have become well recognised. But clinicians are less generally familiar with the psychological abnormalities that are to be found almost constantly in subjects of cerebral lues during some phase or other of their illness, and may be the most prominent feature of the clinical picture presented. This hiatus in general medical knowledge of the disorder may be in part ascribed to the varied character of these mental changes, and also to their close resemblance to some neuroses and psychoses. Thus, in milder cases, the symptoms complained of may at first sight be indistinguishable from those of neurasthenia. The patient is listless, depressed, tearful, worried over trifles, has great difficulty in paying sufficient attention to his business, and in being interested in affairs that used to engross his attention: his memory for recent events is faulty and his diminished efficiency is a source of great worry to him. The resemblance of this disordered mental state to neurasthenia is enhanced by its changefulness in that periods of spontaneous improvement occur.

By careful attention to the nature of certain symptoms, however, points of distinction can often be made out. For example, the neurasthenic headache is more a discomfort than a pain. It is often described as a sensation of weight on the top of the head or of pressure in the temples, or as if a band were constricting the head. On the other hand, the characteristic headache in cerebral lues is severe, prolonged, and prostrating and may be associated with repeated vomiting. Again, the syphilitic looks more ill, is more tremulous, and his fears are less liable to be temporarily dissolved by robust optimism and reassurance. But although these distinctions may excite suspicion, the diagnosis really rests upon the results of careful inquiry into the mode of onset and development of the illness, the question of venereal infection, and examination of the patient for physical signs. If the diagnosis is still in doubt, the reactions of the blood and spinal fluid should be investigated. It should, of course, be remembered that neurasthenic symptoms in a patient who has been infected with syphilis does not necessarily mean that they are manifestations of meningo-encephalitis or arteritis. Although the infection may have been effectively treated at an early stage the patient may doubt the completeness of the cure and dread a recrudescence of the complaint in some terrible form. Under such circumstances a neurosis may readily germinate and develop in a sensitive individual. Suicides from this cause are not unknown. Many syphilophobics have had syphilis, but not all have been cured of their infection, and in every case thorough investigation is an essential preliminary to diagnosis and treatment.

Not uncommonly in cerebral syphilis more severe grades of mental derangement are met with. The neurasthenia-like state we have been considering may be interrupted by a phase of delirium or maniacal excitement, and if the patient is first seen in one of these attacks the diagnosis of the underlying cause may be very difficult. In the delirium there may be complete disorientation with visual hallucinations, but, unlike the hallucinations in delirium tremens, these do not usually take the form of loathsome animals and horrible faces. The absence of evidence of peripheral neuritis and the presence of Argyll Robertson pupils and other suggestive signs aid the diagnosis. An accurate account of the patient's previous health and of his habits would, of course, be of great help, but this is not always easy to obtain from relatives and attendants.

Sometimes periods of excitement alternate with periods of semi-consciousness in which purposive actions, such as ordinary household duties, may be carried out without any memory of them being retained.

An interesting mental disorder in relation to diagnosis is one in which there is an uncontrollable desire to sleep lasting for days, often succeeded by insomnia. When prolonged lethargy of this kind is an early symptom, encephalitis lethargica would naturally be suspected. As already mentioned, diplopia and defective reactions of the pupils, to light or on accommodation or both, are common in this disease and are another source of confusion. Often the diagnosis must rest on serological tests. A lymphocytosis in the cerebro-spinal fluid may be found in encephalitis lethargica as well as in cerebral syphilis, but in the former the Wassermann reaction (W.R.) in both blood and spinal fluid is negative.

Any of the mental disturbances we have so far considered may pass into dementia, and although it is denied by some observers, there is no doubt but that intellectual and emotional impairment may gradually develop as the sole manifestation of disordered mental function in cerebral syphilis. The following excellent example is at present under my care in the London Hospital.

A man of 43 contracted syphilis in 1903 in South Africa. He had held a good position and had average ability. In 1912, while acting as assistant purser on board ship, he had a seizure, after which he was aphasic and paralysed on his right side. He lay in a stuporose state for three or four days, refusing food, and passing urine and fæces under him. Some time later in the same year he was admitted to the London Hospital under the care of Dr. Henry Head; in the hospital records it is stated that he was dull and apathetic and lay curled up in bed, speaking only when he was questioned. He gave sensible answers to simple questions, but his memory even for past events was very poor and his attention feeble. He was completely disorientated in regard to time and was unable to give correctly his age or dates of occurrence of prominent events in his life. He did not suffer from headache, but vomited occasionally and had incontinence of urine and fæces. Careful examination of his nervous system failed to reveal any other abnormalities, except tremulousness of his hands. The W.R. in his blood was strongly positive but negative in his spinal fluid, which contained only two cells per cubic millimetre.

Between May, 1912, and October, 1913, he was given a course of mercurial inunctions and two injections of salvarsan;

he improved considerably, but remained mildly demented, leading an idle existence, apparently without interest in anything. Until recently he has been living on a farm, but unless someone was continually with him to spur him on, he could not direct his attention or stimulate his interest even for a short time to carry out simple duties. He is not at all resistive, but is apathetic and listless and has no desire to do anything. His memory is still very defective, and he is as disorientated as he was before. There is a very slight weakness on voluntary movement of his face and tongue and palate on the right side, and although his pupils react well to light the contraction is not maintained. The W.R. in the blood is still positive, but the spinal fluid is normal.

This case is of interest for several reasons: (1) It is a good example of simple dementia due to meningo-encephalitis; (2) onset after an apoplectiform seizure is not uncommon in such cases; (3) few physical signs are present; (4) the improvement up to a point with antisyphilitic treatment; (5) the non-progressive character of the disability during the last ten years; and (6) absence of changes in the spinal fluid.

I have enlarged upon this case also in order to stress the fact that dementia in a syphilitic subject does not necessarily mean general paralysis of the insane. The distinction is important, for dementia paralytica is invariably fatal within a few years of its onset, and treatment is of little or no avail in arresting its progress. Further, I am convinced that as the result of wrong diagnosis many cases of meningo-encephalitis with dementia are sent to asylums as incurable, and in consequence are not treated. In dementia paralytica remissions and relapses occur, but its course is progressive, leading to increasing mental and physical deterioration; the W.R. is probably always positive, not only in the blood but also in the cerebro-spinal fluid, which in addition shows an increased globulin content, lymphocytosis, and the so-called paretic form of colloidal gold curve.

Before leaving the subject of dementia as a manifestation of cerebral syphilis, another diagnostic difficulty must be mentioned. When the disorder appears in adolescence it may easily be confused with dementia præcox. The resemblance is increased if negativism is present, as it may be. But a careful inquiry into the evolution of the illness, together with a search for signs pointing to focal cerebral lesions and investigation of the reactions of the blood and spinal fluid, will clear the diagnosis.

Hemiplegia.

It is, I am sure, unnecessary to remind you that hemiplegia, occurring in a patient under middle age who is not a subject of cardiac disease, is very frequently due to cerebral syphilis. Strictly speaking, it is perhaps most frequently a manifestation not of meningo-encephalitis but of arterial disease, and although the W.R. is positive in the blood it is commonly negative in the cerebro-spinal fluid. When, however, it is accompanied by changes in the pupils, cranial-nerve palsies, or evidence of spinal-root lesions the spinal fluid usually shows specific alterations.

Epilepsy.

Jacksonian attacks are well-recognised symptoms of meningo-encephalitis of the convexity of the brain, and I need not do more than mention them in passing. But I wish to draw attention to the undoubted occurrence in cerebral syphilis of recurring seizures, often indistinguishable from those of idiopathic epilepsy. This clinical form of the disease is not common, but along with cerebral tumour it should be kept in mind when a patient over 20 develops epileptic seizures for the first time. They may be of either the grand mal or petit mal variety and usually recur at fairly long intervals. A feature of them which may help in diagnosis is that the patient is often dazed or stuporose for a longer time after the attack than is usual in diopathic epilepsy. Pupillary abnormalities or other organic signs, when present, would suggest the possibility of syphilis as the underlying cause and the W.R. ought to be examined. It is needless to say, however, that a positive W.R. in an epileptic does not necessarily prove that syphilis is at the base of the complaint; but if physical signs are present and antisyphilitic treatment has a beneficial effect it is practically certain that the syphilitic infection is the cause.

VALUE OF LABORATORY TESTS IN DIAGNOSIS OF CEREBRAL SYPHILIS.

Discussion has recently been renewed in regard to the diagnostic value of the W.R. in syphilitic infections. In relation to diseases met with in this country, with a few known exceptions, it can confidently be said that a definitely positive reaction indicates infection with syphilis, when the test is performed by a competent clinical pathologist. A negative result, however, is not always of the some clear value in diagnosis. For example, in tabes a negative reaction in the blood is by no means uncommon during a quiescent phase; even in the spinal fluid the reaction is sometimes found to be negative.

In cerebral syphilis when the disease is progressive a positive W.R. in the blood can almost always be obtained. In the cerebro-spinal fluid the reaction may be positive or negative. It may be negative when the disease is confined to the cerebral arteries, or sometimes—as in the case of the dementia I have quoted—even when the pathological process is more extensive but the contents of the spinal canal have escaped. A positive W.R. in the spinal fluid is practically always accompanied by lymphocytosis, increased globulin content, and a positive colloidal gold curve.

TREATMENT.

When cerebral lues is diagnosed early, and suitable treatment instituted, good results in a large number of cases can be expected. The disease can frequently be eradicated, and failing this ideal result improvement almost always takes place. But to attain this end treatment by antisyphilitic remedies must be carried out for a long time, and, equally important, it should be judicious. To get the maximum beneficial effect the physician should never lose sight of the patient's general health in his eager attack upon the disease. The drugs used are, in large doses, highly poisonous, and idiosyncrasies to them are not rare.

In severe cases of cerebral syphilis, when the patient is in poor health or when his mental functions are seriously disordered, he should, during treatment, be confined to bed until his condition improves. His diet must be supervised, and when somnolent he may have to be artificially fed.

Insomnia and restlessness or maniacal excitement can best be treated by warm baths and hypnotics, such as paraldehyde or veronal. A useful drug for this purpose is morphine bimeconate in a 2 per cent. aqueous solution. It is given by the mouth in water, an average dose being 25 or 30 minims, repeated in two or three hours if necessary. It has a most soothing effect, especially in cases of nocturnal restlessness. Severe headaches may be the cause of sleeplessness, and when so the treatment of insomnia lies in giving relief from pain. In such circumstances the following powders will be found useful. The basis of them is 5 gr. each of aspirin and pyramidon. If this fails to give relief, one-twelfth or one-sixth grain of heroin hydrochloride should be added. This will usually be successful; but if the patient, although free from pain, is still unable to sleep, the addition of 2½ or 3 gr. of veronal will be sufficient in most cases to give the desired result.

For epileptic seizures sedatives as well as anti-syphilitic drugs are necessary. In my experience a combination of bromide and luminal-sodium is best. An average dose is luminal-sodium gr. i., sodii brom. gr. v. with liq. arsenicalis ℥ ii., and inf. gent. co. ½ oz.

twice or thrice daily; but the dose must be suitably adjusted in each individual case. A localised gumma of the meninges on the convexity may have to be removed by operation, if it is giving rise to progressive symptoms of cerebral tumour which antisyphilitic treatment fails to relieve. There is no absolute contra-indication to the use of antisyphilitic remedies, but for old and feeble patients, especially when the kidneys are diseased, small doses should be used and a close watch kept on renal function.

Of the drugs at our disposal arsenobenzol compounds, mercury, and potassium iodide are the most important. Novarsenobillon is the arsenical preparation most used in this country, in doses of 0·15 to 0·9. In my opinion, as a single dose 0·6 g. should rarely be exceeded, and in order to ascertain the patient's tolerance to the drug it is wise to begin with small doses. The drug can be given intravenously, subcutaneously, or intramuscularly. If the subcutaneous or the intramuscular method is employed the drug must be dissolved in aqueous glucose or an oily medium. Sicard, who advocates these methods, uses novarsenobenzol, galyl, or sulpharsenol in small doses—0·15 to 0·2 g., repeated every two days for two months. The injections are said to be almost painless, and excellent results are claimed for this form of treatment.

The method I usually adopt is to give four or six weekly injections of novarsenobillon. This is followed by a course of three or four weeks' duration of mercury either in the form of inunctions or by mouth, together with potassium iodide. An interval of three or more weeks, according to the condition of the patient, is now allowed to elapse before treatment is again begun. The effect of treatment should be gauged at the end of each complete course, not only by the clinical condition of the patient, but also by the reactions of his blood and cerebro-spinal fluid; for it must always be remembered that the disappearance of the patient's symptoms does not necessarily mean that his disease has been cured.

Treatment should be continued periodically, even after improvement in the laboratory tests and in the clinical state has ceased. In general, after two to four complete courses of novarsenobillon, mercury, and potassium iodide, further treatment should be delayed for from 6 to 12 weeks. The necessary precautions during treatment with mercury and potassium iodide and the symptoms of poisoning by these drugs are well known and need not detain us now. But the dangers associated with the administration of arsenic may be mentioned. In the first place, patients with an idiosyncrasy to the drug are now and again met with, hence the advisability of testing as a routine the tolerance to organic arsenic by the administration of an initial minimum dose. When there is an unusual susceptibility to the drug the patient, within a few minutes of the injection, may be seized with malaise, vomiting, and pyrexia, and an erythematous rash may appear. Secondly, sometimes a more intense and even fatal reaction of the nature of anaphylactic shock is met with. On the day after the first or a subsequent injection of novarsenobillon convulsions, pulmonary œdema, and coma may rapidly develop and the patient may die. Thirdly, a few hours after an injection the patient's symptoms may be temporarily increased—the so-called Herxheimer reaction. The appearance of one or other of these reactions is a contra-indication to either further use of arsenic or, if it is continued, the employment of more than minimum doses. Lastly, prolonged and injudicious administration of arsenic will lead to chronic poisoning, of which early symptoms are erythematous eruptions, jaundice, and peripheral neuritis. Arsenic therapy must then be discontinued for at least two or three months.

In closing, let me again insist that either disappearance of symptoms or a stationary clinical state is not by itself a reliable indication of cure of the disease. But in general the syphilitic infection has been eradicated when in addition the specific tests in the blood and spinal fluid have remained negative for five years.

SECONDARY OPERATIONS UPON THE BILIARY SYSTEM.[1]

BY SIR BERKELEY MOYNIHAN, BART., K.C.M.G., C.B., F.R.C.S. ENG.,
SENIOR SURGEON, LEEDS GENERAL INFIRMARY; PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF LEEDS.

THE subject allotted to me in this discussion concerns those cases in which a recurrence of symptoms takes place after an operation upon the common bile-duct. About one-fifth of the total number of patients suffering from cholelithiasis upon whom I operate have previously been submitted to operation for this condition. Secondary, tertiary, or multiple operations upon the biliary system may be made necessary by a variety of causes, among which the chief are the nature and condition of this disease, and of its complications and remote effects; and imperfect primary operations.

Factors in Stone Formation.

A study of the nature and condition of the disease must chiefly have regard to the factors bringing about the formation of stone. These factors are dual: infection reaching the bile channels, and an increase in the cholesterol content of the blood. The great majority of the stones which require removal are formed in the gall-bladder; when stones are found in the ducts it is because they, or the small particles from which the larger stones develop, have escaped from the gall-bladder. But there are cases, happily few in number, in which stones are formed in the smaller ducts within the liver, or in the larger ducts which lead to the intestine. An infection may reach the gall-bladder from several directions—from the blood-stream; from the bile flowing downwards from the liver; from the lymphatic plexuses of the appendix, pancreas, liver, &c., which most freely anastomose with that of the gall-bladder; from the common duct, which in turn receives infection from the duodenum; and finally, by contiguity through adhesions to neighbouring organs. Though these are the direct and proximal routes, it is evident that the infection travelling along them is not necessarily a primary infection in the organ from which it is immediately derived. Infection coming from the liver may be primary elsewhere in the body, gain access to the blood-stream, mature in the spleen, and ultimately reach the liver by way of the splenic vein. A search for infective lesions must therefore involve a scrutiny of the whole body, so that the most lurking area of infection may be revealed. A failure to discover such an infection may be responsible for a recurrence of stones in the gall-bladder, the liver, or its ducts.

The cholesterol content of the blood is an important agency in the causation of gall-stones. We have still a good deal to learn with regard to cholesterin, and its presence in the blood in excess in certain conditions. Blood cholesterol determinations have been made for me by Miss Shiskin on a large number of patients suffering from various abdominal disorders, and 100 consecutive cases have been scrutinised for the purpose of this review. In conditions other than cholelithiasis or cholecystitis, low or normal values have been found to be the rule. In uncomplicated cases of cholelithiasis, on the other hand, the cholesterol content of the blood tends to be high. Thus in 40 such cases examined the blood cholesterol values ranged from 0·133 per cent. to 0·409 per cent., the average value being 0·210 per cent. If we take 0·160 per cent. as the average normal figure, with 0·192 per cent. and 0·133 per cent. as the upper and lower normal limits, 60 per cent. of the cases are seen to be hypercholesterolæmic, and, although in the remaining 40 per cent. the cholesterol content of the blood is normal, it is to be noted that in three-quarters of these (that is 30 per cent. of the total) high normal values have been obtained.

[1] The opening remarks made at a discussion on the Surgery of the Hepatic and Common Bile-ducts at the Royal Society of Medicine on June 27th, 1923.

In all the cases of cholelithiasis examined a marked fall in the cholesterol content of the blood was observed shortly after the operation. This fall is not confined to cases of cholelithiasis. It has been noted by me in diverse other conditions after major surgical procedures, for example, after prostatectomy, gastrectomy, splenectomy, &c. In the cases under discussion the fall is to be attributed sometimes to the direct drainage of the biliary passages, but the effects of the anæsthesia, the slight elevation of temperature sometimes present after an operation, and, indeed, the disturbed metabolism consequent on operation, must all be regarded as contributing factors. Subsequent re-examinations show that after the initial fall there is a rise, in some cases, a progressive one, so that the cholesterol content of the blood may soon reach the pre-operative figure. Such cases belong to the diathetic group; that is to say, they are more or less continuously hypercholesterolæmic, and even after operation for cholelithiasis the hypercholesterolæmia may persist. In the majority of the patients, however, the cholesterol content of the blood had fallen to normal and was found to have remained at the normal level when examined 14 months after the operation.

The treatment of the patient after operation must therefore take into account this condition of hypercholesterolæmia. The following instructions as to diet are given to all patients after operation:—Articles of diet which must be avoided: Yolk of egg, brains, kidneys, sweetbreads, liver, goose and duck, pork and game, fat, stewed and fried meats, cream and cheese, fresh fruit and green vegetables (for three months), butter (only to be taken in small amounts, if at all). A recurrence of symptoms after an operation upon the common bile-duct may also depend upon the following circumstances.

Imperfect Primary Operations.

1. Stones may be overlooked or left behind in any part of the extrahepatic ducts, including the ampulla of Vater. There are times when even a practised surgeon may have his doubts about the presence of a stone in the common duct. In cases when the gall-bladder is thick and shrivelled, and has ceased to perform its functions, the common duct may be found not a little dilated. After the gall-bladder has been removed the same change constantly occurs. What Rutherford Morison calls the "natural cure" of cholelithiasis consists in the closure of the cystic duct and the shrinking of the gall-bladder until it becomes a mere fibrous or calcareous covering for the stones remaining inert within its cavity. The common duct then may be obviously, even grossly, dilated. The question of how best to decide whether such a duct contains a stone is one that surgeons answer differently. The enlargement of glands along the duct and the presence of hard nodules in the head of the pancreas may cause the surgeon to feel almost confident that a stone is present. And in such circumstances the opinion is very generally given that the duct should always be opened and "explored." I disagree most confidently. Exploration of the duct with anything but the finger is a most uncertain method of discovering or locating a stone. A probe or a small scoop will miss a calculus, even one of good size, over and over again, especially if it happens to be in a little pocket aside from the main channel of the duct. Beyond any question the surest method of deciding whether the duct contains a stone is to pass the first and second fingers of the left hand through the foramen of Winslow and the thumb in front of it, and to palpate the duct and compress it between the fingers and thumb, as they travel gently upwards and downwards. To the expert fingers the tiniest fragment of stone can be felt as soon as the duct is empty of bile. The left hand of an assistant, if he too is expert, should carry out an independent investigation. During the last few years I have rarely opened a common duct merely for the purpose of deciding whether it contained a stone. The exploration of a sufficiently dilated duct can be carried out with the left forefinger passed inside it with the extreme probability that with adequate skill and unwearied patience the last fragment of stone will be discovered.

When a stone which lies concealed in the ampulla of Vater has been overlooked at the primary operation, the duodenum should be opened and McBurney's or Kocher's operation performed. After either of these operations the drainage of bile into the duodenum is very free and unimpeded. I am very fond of both of these methods. They can be performed with the utmost daintiness and precision, with extremely little risk, and with the confident prospect of a perfect result. The making of a large opening at the lower end of a dilated duct, with, or more often without, the suture of the duct edges to the duodenal wall, will allow stones of even medium size to escape readily into the intestine. I feel sure that these operations are not practised sufficiently often. I am beginning to entertain a belief that they may be the safest of all operations upon the common duct, and those in which there is the most confident prospect of complete relief for the future. At least I can claim that their range should be greatly extended. Even when it is not necessary to open the duodenum the dilatation of the lower part of the duct from above is a most useful procedure. It may be effected by the passage of probes of the type suggested by Mayo, or by the passage of a rubber catheter through the duct into the duodenum. A later reference will be made to this procedure.

2. Particles of grit may be left in the lower intrahepatic ducts, or in the hepatic or common duct, and inadequate drainage may not give them time to escape. The question of drainage after the operation of choledochotomy is one that still exercises the minds of surgeons, and certain surgeons who ought to know better are practising and advocating the immediate suture of the duct after every operation upon it. In every case of obstruction of the common duct by calculus there is cholangitis, and in a large number of cases there is mud, or dust, or sand, in addition to the larger stones. When there is a large solitary stone of recent descent from the gall-bladder, the closure of the duct may sometimes be safely performed. I have done this a few times in years gone by, always with a feeling of anxiety during the few days following operation, and with no ultimate advantage of any kind to the patient. I make it a rule, and have done for many years, to drain the hepatic duct in all cases of multiple stones. Some of the patients are gravely ill, and in them the method of McArthur of passing a catheter down the duct into the duodenum for the purpose of giving fluid nourishment is invaluable. The catheter acts by the method of "continuous dilatation," which Sir Henry Thompson originated and wisely advocated for the treatment of urethral stricture. Any narrowing of the common duct is, for a time at least, completely overcome, and during that time the smaller stones or the coarse dust and mud of the ducts above are able to escape into the intestine. I give through this tube a 5 to 15 per cent. solution of glucose, with a little carbonate of soda, by the "drip" method, interrupting the steady flow every three or four hours, to give a meal of peptonised milk, beaten eggs, &c. As much as 10 to 12 pints of fluid a day may be introduced in this way with great advantage. The tube remains for ten days to a fortnight.

When many stones and much mud have been removed from the common and hepatic ducts, small particles of grit may long continue to descend upon the gauze strips passed up into the ducts to clear them. In such cases I pass Carrel tubes up into as many of the intra-hepatic ducts as I can recognise. These ducts are sometimes so large as easily to contain the finger, and there is no difficulty in passing tubes into them. Around the common-duct incision a barrier of dental rubber is placed. At the end of 24 to 36 hours, when the peritoneal cavity is sealed off, I start the intermittent irrigation by the method of Carrel, washing the ducts out with large quantities of sterile salt solution or plain boiled water. In one such case the nurse counted a few hundred stones and weighed

them, and finally weighed the total mass of tiny stones and particles of coarse dust washed down from the liver. She assessed their total number in this way, as "well over a million"! The operation was four years ago, and there has been no recurrence of symptoms, though the operation I performed was the fourth attack made on the common duct. For the first ten days an abundance of fluid was given through a catheter passed into the duodenum. This case raised the question as to the origin of the infection responsible for the formation of the stones. It would appear that in such cases the most likely route of delivery of infective material to the liver is by the splenic vein. In a later case than this, where the spleen was slightly enlarged, I performed the sixth operation upon a patient, drained the blocked hepatic ducts of many thousands of small stones, and then removed the spleen. The washing out of the ducts continued for six months; after that time the bile drained away through the wound, which has closed and broken down again several times since, but stone formation appears definitely to have ceased. I therefore advocate drainage of the hepatic duct in all cases of multiple calculi; drainage with irrigation of the ducts in many of the cases, especially the secondary ones, in which the ducts contain great quantities of mud, the employment of the method of McArthur of catheterism of the lower part of the duct; and in cases in which the lowest part of the duct contains calculi, a more frequent resort to the operation of McBurney. If typhoid organisms are found in the bile the administration of urotropine by the "thump" method is necessary. Thirty grains of acid sodium phosphate in one pint of water are taken during the day, and at night a single dose of urotropine beginning at 30 and increasing to 60 gr. is taken. At the end of a week a respite of a few days is allowed during which alkalies are given. The administration of urotropine again begins and is again interrupted.

3. In cases of primary cholecystectomy failure to divide the cystic duct at the proper place may be responsible for disaster. The variations in the mode of entry of the cystic duct into the common duct and of the variations in the vascular supply of the gall-bladder and ducts have not been sufficiently considered by surgeons in the past; the recent work of E. R. Flint in this connexion may be studied with great advantage. The cystic duct not infrequently runs for an inch or more side by side with the common hepatic duct, to which it is closely bound, until it enters with it into the formation of the common duct. The two may, indeed, not unite until they almost reach the duodenum. If a long piece of the cystic duct is left behind a stone may lie within it and there increase, or may quietly migrate from it and escape into the common duct. On the other hand, too much of the cystic duct may be removed, and with it a piece of the common duct, or of the hepatic duct. The pelvis of the gall-bladder is at times so intimately adherent to the common duct that when the gall-bladder is lifted up to enable the cystic duct to be cleared, the common duct may be stretched, and then so closely resemble the cystic duct that the greatest care is necessary to distinguish them. The inviolable rule in the surgery of the gall-bladder and of the common duct is this: "See exactly what you are doing, and until you see do nothing." On four occasions I have removed a part of the common hepatic or common bile-ducts, happily not to a degree prejudicing the recovery of the patient, because immediate repair of the duct was performed. If this tragedy should occur it should be redeemed at once. The parts are then all in view, and supple, and restoration is not by any means as difficult as it will prove to be in later weeks or months. It is the surgeon who bungles in this fashion who is then the only sufferer. He feels that the operation has not displayed that degree of ease and mastery in efficient action which stamp the artist; and he has the misery of knowing that he has given less than his best to his patient.

If too much of the cystic duct is removed, and with it a part of the common duct, a stricture of the latter may result. This stricture may itself be responsible for symptoms which closely resemble those of a floating stone, or be the means of causing that degree of stagnation of bile which leads to infection and makes easier the formation of a stone. A few cases have come my way in which a complete segment of the common duct had been excised, and I have had to reconstruct the duct or to anastomose the hepatic duct to the duodenum.

Improper Operations.

At the primary operation upon a case of cholelithiasis when stones are present both in the gall-bladder and in the common duct, the question as to the best procedure to adopt with reference to the gall-bladder will always arise. At a time when operations were performed with difficulty and attended by grave risk, at a time, too, when relief from symptoms after operations by competent surgeons was less frequent than it is now, it was felt that removal of the gall-bladder was unwise. If mistakes were to be made at all, it was safer to make the mistake of leaving the gall-bladder than the mistake of removing it; the former error could be made good, the latter was almost irreparable. But as the quality of surgery improved, and as by degrees we learnt that recurrence of stones in the common duct was so frequently due to recurrence first taking place in a gall-bladder which had only been drained, and that pancreatitis might arise and often probably did arise by extension from the walls of a diseased gall-bladder, the practice of the removal of the gall-bladder grew more common. A study of its walls showed often that they were filled with organisms, and that the elastic and muscular coats were so thoroughly disorganised, and the mucosa so changed, as to render the viscus incapable of adequately fulfilling its functions either as a reservoir competent to discharge its contents on demand, as a regulator of the rate of discharge of bile, or as an organ secreting a constituent which it was proper for the bile to possess on entry into the intestine or otherwise. The cases in which the gall-bladder is needed for anastomosis with the duodenum at a second operation are now so exceedingly few that this consideration need hardly weigh with the surgeon as he reflects upon the course he is to follow.

The present practice of most surgeons whose experience is large is to remove the gall-bladder at the time the common duct is emptied of its stones.

Involvement of the Pancreas.

There are conditions of the pancreas, its chronic or subacute inflammatory states, that may cause a very close mimicry of the symptoms of calculous obstruction of the common duct. The frequency of the association of disease of the pancreas with cholelithiasis is variously estimated by different observers. The pancreatic changes are not easily measured during an operation. It is difficult to gauge the size of an organ so long and so remote with any approach to accuracy; and qualities of texture in respect of hardness, in one part or another, cannot be expressed in terms that make one surgeon's experience comparable with that of another. Removal of a portion of the pancreas is open to the fallacy that the area chosen may not be equally involved with the rest of the organ. But with all due and necessary allowance for these truths there can be no doubt of the frequency, and the occasional grave severity, of the pancreatic changes. The route by which infection reaches the pancreas is not necessarily the same in all cases. The cause of the cholelithiasis may be the cause of the pancreatitis, or the latter may be the consequence of the former. If the pancreatitis is secondary to cholecystitis the infection may travel from the gall-bladder down the common duct, and along the canal of Wirsung; or it may pass in the lymphatic plexus which is common to the two. Some clinical and all experimental evidence (especially Nordmann's) suggests that invasion by the ducts is the more likely; but there is evidence, too, derived from operations, that lymphangitis may be the chief factor in causing the changes in the

pancreas. Whichever may be, in any special case, the correct explanation, it is evidently a safer plan to remove the gall-bladder than to drain it. Cholecystectomy is beginning to displace cholecystenterostomy in the treatment of chronic pancreatitis, as a result, chiefly, of the advocacy and practice of Deaver.

The typical symptoms of calculous obstruction of the duct may occur in the absence of calculus. In operating upon such cases it is a little disconcerting to find a distended common duct in which no stone is present. The head of the pancreas, especially, will be found enlarged and hard and œdematous. The duct lies in such intimate relationship with the gland, that a swelling of the latter compresses the duct, causes stagnation of bile, and consecutively a degree of cholangitis that may be very severe. In such cases the T-shaped tube of Kehr may be used to drain the hepatic duct intermittently, or, as I prefer, two catheters may be introduced, one draining the hepatic duct, the other passing downwards into the duodenum and affording the channel by which abundant nourishment may be given.

Operations on Deeply Jaundiced Patients.

All the operations upon deeply jaundiced patients raise two questions—that of hepatic insufficiency and of its avoidance, if such be possible, by an adequate preliminary preparation of the patient, and that of post-operative hæmorrhage. The symptoms due to the failure of the liver are apt to come quite unexpectedly. The operation has perhaps presented no unusual difficulties, and the patient leaves the operation theatre in good condition. For a few days all goes well; then one of two events attract serious attention. The amount of bile discharged may suddenly diminish or almost cease; jaundice deepens slowly; the pulse becomes slower; the mind is clouded; nourishment is sparsely taken or refused, when it is well taken vomiting begins; the amount of urea in the blood steadily augments, the patient grows rapidly weaker, and dies after a period of coma. In these cases, as Walters has shown, it is renal failure consecutive to hepatic failure that causes death. Or the picture so well described by Walters and Parham may be seen.[2]

"*Clinical Picture of Hepatic Insufficiency.*—Usually the first two to eight days after operation the course is uneventful; biliary drainage and urinary output are normal, fluids are taken well, the pulse and temperature are normal. One of the first signs of the onset of trouble is paling and thinning of the bile with marked increase in the flow. This profuse cholerrhagia does not continue long, but the bile remains thin. The patient begins to grow weaker, the pulse loses volume, and the temperature becomes subnormal. Restlessness and irritability develop with great fatigue and muscular weakness. Soon regurgitant vomiting follows intake of liquids by mouth and little taken by rectum is retained. Jaundice does not deepen markedly, but there is an increasing pallor beneath the icteric blue, the face becomes drawn, and the eyes anxious. The patient grows progressively weaker and finally dies. The urinary output remains proportional to the fluid intake throughout, and the urine reveals little or no evidence of marked nephritis. The blood-urea remains persistently low."

Post-operative hæmorrhage is due to the reduced power of coagulation of the blood, and this probably depends upon a lack of calcium salts. The deficiency of these is made good in two ways, by direct transfusion of blood, or by the intravenous administration of 5 c.cm. of a 10 per cent. solution of calcium chloride on three successive days, as advised by Walters, and by Lee and Vincent. The giving of calcium salts by the mouth even in colloid form has little effect, when, indeed, it has any, upon the calcium content of the blood. The coagulation time of the blood may be brought down to the normal or to the near neighbourhood of the normal by the intravenous administration, and the operation carried out at the appropriate moment. In all these cases it is necessary to administer as much glucose as possible by the mouth and by the rectum, and at the operation to take every care to ligature the smallest vessels. It may sometimes be prudent to postpone the removal of the gall-bladder because of the slow but unceasing weeping of blood from the denuded surface of the liver which sometimes follows upon cholecystectomy.

[2] Surgery, Gyn., and Obst., 1922, xxxv., 605.

Secondary operations upon the biliary system are among the most difficult tasks in surgery. To obtain the best results all the highest qualities of the surgeon may be called into play: courage, resource, patience, accuracy and rapidity of judgment, the finest craftsmanship, and a tranquillity of mind and action that nothing can disturb.

STONE IN THE COMMON AND HEPATIC DUCTS.

BY JAMES SHERREN, C.B.E., F.R.C.S. ENG.,
SURGEON TO THE LONDON HOSPITAL, ETC.

THE presence of stones in the common and hepatic ducts is usually significant of the absence of efficient treatment in the particular patient in whom they are found. They denote failure in carrying out the only satisfactory treatment of gall-bladder disease, early cholecystectomy; this would have effectually prevented their entrance into the ducts. This failure is due to errors in diagnosis as well as inefficient treatment. Patients are still too often treated for various types of dyspepsia; that is, symptoms only are treated, and even after the onset of colic we still see attempts made to avoid operation. There is no medical treatment known at present that will remove the cause of the stone formation or dissolve those already formed; all attempts at such must fail and the ultimate death-rate far exceeds that of the curative surgical procedure. The relative number of cases operated upon at the stage when this complication has arisen must vary somewhat in every district according to the skill and bias of its practitioners and the skill and reputation of its surgeons. The percentage in Sir Berkeley Moynihan's private patients as given at Leeds last year was 21·96 (67 out of 305), differs little from mine, 18·5, which includes both hospital and private cases (113 out of 600).

It is obvious from my opening remarks that I do not believe stones form primarily in the ducts except certain rare pigment calculi associated with disease elsewhere. They may, however, increase in size and in number when infection is present and extend in a continuous column from the ampulla of Vater to the liver and even fill the intra-hepatic ducts. It follows, therefore, that if stones are found in the common duct after a previous operation for gall-stones, they must have re-formed in the gall-bladder, if this was left, or have been overlooked. This is easy unless they are systematically searched for, and even then they may be missed.

Difficulty of Pre-Operative Diagnosis.

Pre-operative diagnosis is only possible in the presence of typical attacks of colic associated with jaundice, often with rise of temperature. Jaundice is usually present at some time during the progress of the case; thus, in the 113 patients upon whom these remarks are based it had occurred in 78, but only in 33 was it severe and present at the time of operation. Many stones may be present in the common duct without producing jaundice and, on the other hand, a transient jaundice may follow an attack of biliary colic and the ducts are found at operation to be clear and the correctness of this confirmed by the subsequent history. In most instances the patient was operated upon for gall-bladder disease and the stones found in the ducts, not by accident but as a result of a definite exploration. Among the 33 cases in whom marked jaundice was present at the time of operation, in 2 it had never been associated with pain; as a distended gall-bladder could be felt the diagnosis of carcinoma of head of pancreas was arrived at. In the majority there was a history of abdominal symptoms extending

* A contribution to a discussion on the Surgery of the Hepatic and Common Bile-ducts at the Royal Society of Medicine on June 27th, 1923.

over many years for which all the recognised forms of medical treatment had been tried.

Most of these cases were operated upon between the ages of 45 and 55, the oldest patient was 76, the youngest 23 with a three months' history. Her first symptom was a typical night attack of biliary colic followed by jaundice, and before I saw her she had had six further attacks. I removed five small calculi from her common duct. She is now 30 and has had no recurrence. It is my impression that stone is more often met with in the ducts in women, probably because of the earlier date at which men seek treatment. In my common-duct series there were 22 men. To compare with this I have taken my last 113 consecutive cases of cholecystectomy with stones in gall-bladder only; 41 were men. I do not think it is extravagant to prophesy that operations on the common duct will become rarities within the next generation of surgeons, as the students educated in the modern methods of treatment of abdominal disease go out into the world.

Treatment.

With regard to treatment, this consists in removing the stones and carrying out cholecystectomy to prevent further stone formation. I shall deal first of all with those cases, and they are the most common, in which operation is undertaken for gall-bladder disease but in which the symptoms give no indication of stones in the ducts. A shrunken gall-bladder, a dilated cystic or common duct, may at once point to its probability. In all these, and in those in whom there is a history of jaundice, after removal of the gall-bladder, the common and hepatic ducts should be explored through the stump of the cystic duct, enlarging the opening by cutting downwards if necessary and removing calculi if found. Before suturing the opening a pair of fine forceps should be passed and the ampulla dilated. The incision should be closed with a continuous stitch of hardened 00 gut and a drain left to the site of incision. This is, in my experience, the most frequent type of operation. Drainage of the ducts is imperative when infection is present or if much manipulation has been necessary in removing the stones. If calculi become impacted they do so in the ampulla, but it is rare indeed that any other approach but that mentioned is necessary for their removal. In only two have I been compelled to open the duodenum to remove such a stone, and on one occasion I mobilised the duodenum and removed an impacted calculus. All these terminated successfully. It has been a common teaching that the gall-bladder is shrunken in most cases of stone in common bile-duct; this is usually so in late cases with obstructive jaundice, but in only 44 of my series was there a small gall-bladder; in five of those with jaundice it was reduced to a fibrous cord without lumen. A dilated gall-bladder does not exclude stone in the common duct.

To pass now to the cases where stones can be palpated in the ducts. I still remove these where possible, by cutting into the common duct from the stump of the cystic. To be *certain* that the ducts are clear is impossible. On occasions, after removing with forceps and scoop what I considered were all the calculi, I have been able to syringe several others from the common and hepatic ducts. When faceted calculi or putty-like masses are found in the ducts this should always be done. Dr. W. J. Mayo[1] has told us that in nearly one-third of the deaths which followed operation on the common duct for stone, post-mortem examination revealed stones which had been overlooked. Among my cases that died at varying times after operation were five in which stones that I had overlooked or been unable to remove were found post mortem; that is, in half of those in whom this examination was done. It is instructive that in four of these the operation had been undertaken for obstructive jaundice, and I believe that had I been content with drainage only, leaving thorough search to a second operation, at least two of these lives would have been saved. In two of these the stone which I had felt in the duct could not be discovered, in two stones were removed but small calculi overlooked in the ampulla. In all, stones in the common duct were diagnosed. In only one had the common duct not been explored, a patient of 39. I removed a gall-bladder containing stones, but did not explore the common duct and have a definite note that "no stones were felt." She died of acute dilatation of the stomach the same night. Post-mortem examination revealed a small calculus in the ampulla. Had I passed a probe, as I should do now with such a history, I should have discovered it but not have prevented her death.

To pass on to the treatment of the most serious group of all, those with obstructive jaundice and usually cholangitis. I believe that it is unwise to operate in this stage unless forced so to do. I mean that the patient should be watched for a day or two, except in those cases with rigors, when immediate operation is necessary. While waiting, saline and glucose should be given per rectum. If the jaundice persists, so making operation imperative, it is well to do it in two stages; it is safer and stones are less likely to be overlooked. If the gall-bladder is distended and the cystic duct patent, cholecystotomy should be carried out; if not, temporary drainage of the common duct, with removal of such stones as present. These patients stand prolonged manipulation badly, and in this way I have been able to bring cases to a successful issue that would inevitably have been fatal if I had attempted to deal with everything in one stage. At the second operation cholecystectomy is done and the stones removed, and the ducts thoroughly examined in a way that is unwise in deeply jaundiced, ill patients.

Prognosis.

With regard to prognosis, there were 11 deaths in the 113 patients, 9 of these were among the 33 who were operated on for obstructive jaundice, and in 4 stones were overlooked. In 2 the ducts were filled with colourless fluid, the so-called white bile. Both recovered, and the excretion of bile was established within 36 hours. It is obvious how delay increases the mortality; the longer the period of jaundice the greater is the risk. In none of these cases did death result from hæmorrhage, and I have not, therefore, found it necessary to resort to pre-operative treatment by blood transfusion or the administration of calcium. Three died of lung complications, one under the anæsthetic, the remainder from the tenth to the eighteenth day from hepatic insufficiency. The two deaths among the 80 who were operated upon at a time when they were not jaundiced were due, one to acute gastric dilatation, the other to pneumonia. These figures illustrate how the risk depends on the condition of the patient with regard to jaundice and infection; cholecystectomy for stone where these are confined to the gall-bladder has a death-rate of less than 2 per cent.

What is the ultimate outlook in the patients who have had stones removed from their common ducts? The cases in which I carried out cholecystectomy and in which cholecystotomy had been performed are almost equal. In the first group, 57, there has been no recurrence of symptoms sufficiently severe to need operation and only two in which post-operative colic occurred, and in both it was within a few weeks of operation and did not recur. In one, however, a stone was overlooked and found post mortem. In those in whom the gall-bladder was left further operations were necessary in seven for removal of calculi from the common duct and in one for chronic cholecystitis. The original operation was only done by myself in one of these. The number of stones removed from cases in the first group vary, but even after the removal of hundreds—and in one case the amount was 5 oz.—no recurrence has taken place.

In conclusion, I should like to emphasise the fact that this is an entirely unnecessary complication, and that when the correct treatment for disease of the gall-bladder is carried out we shall cease to have to discuss and carry out operations for the removal of duct calculi.

[1] THE LANCET, June 30th, 1923.

GLANDULAR FEVER AND INFECTIVE MONONUCLEOSIS.*

WITH AN ACCOUNT OF AN EPIDEMIC.

BY H. LETHEBY TIDY, M.D. OXF., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN, ST. THOMAS'S HOSPITAL; PHYSICIAN, ROYAL NORTHERN HOSPITAL;

AND

E. C. DANIEL, M.B., B.CH. CAMB., M.R.C.S.

GLANDULAR fever is an acute, infectious, and contagious disease principally of, but not confined to, childhood, characterised by a rapid and marked enlargement of the cervical glands, and by a less constant and less marked enlargement of the spleen, axillary, inguinal, and other glands. There may be some tenderness of the cervical glands, but they are not acutely painful; abdominal pain is occasionally severe. The fauces are often reddened, and a tonsil may be enlarged, but the presence of exudation is unusual and the changes are characteristically slight compared with the marked glandular enlargement. There is no anæmia in the acute stages. There may be a short preliminary period of malaise, the glands appearing about the third day and reaching a maximum in one to three days. With the swelling of the glands there is pyrexia, which is usually about 103° F., but may reach 105° for a day or two; it rarely exceeds 100° for more than a week. The prominent mass of the glands usually subsides in 5 to 15 days, but may relapse or, if unilateral, may occur on the opposite side. Suppuration is extremely rare, and is probably due to secondary infection. Glands in the neck remain palpable for several weeks, or occasionally for months. After the acute stage there is usually a prolonged period of slight depression of health and anæmia which needs attention. Recovery is finally complete and the mortality is negligible.

The most definite complication is a hæmorrhagic nephritis, usually without other manifestations of renal disturbance. Its frequency in well-developed cases is about 6 per cent. The parotid is not affected. The condition has no relation to mumps, whooping-cough, measles, scarlet fever, or tonsillitis, or to leukæmia, Hodgkin's disease, or tuberculosis, or to infections with pyogenic organisms.

Literature of the Condition.

It was first fully described by Pfeiffer in 1889. In an article which Morley and one of us (H. L. T.) published in 1921 the bibliography up to that date will be found. In the last two years attention has been paid, especially in America, to a condition of acute and transient lymphocytosis which has been described as infective mononucleosis. The lymphocytosis is both relative and absolute, and many of the single counts are indistinguishable from those of the early stages of lymphoid leukæmia. Nearly all these cases have occurred in young adults. A few cases under various titles have been recorded in previous years by Türk, Cabot, Deussing, Hall, Ireland and Ruhrah, and others. Ehrlich had met with it, and a search of the older literature under such titles as "acute lymphatic leukæmia with recovery," or "pseudo-leukæmia" would reveal many examples of it. Successful cures have been claimed to depend on various measures, such as the removal of a carious tooth, the occurrence of the lymphocytosis having been ascribed to this abnormality. Series of cases have recently been published by writers in America: Sprunt and Evans in November, 1920, Bloedorn and Houghton in 1921, and Longcope in 1922.

The highest percentage of lymphocytes which has been recorded in these series is in a case of Longcope's—viz., 95 per cent., with a total count of 23,000 leucocytes—a sufficiently startling occurrence. In the case of Ireland and Ruhrah, published under the title A Case of Lymphatic Leukæmia with Apparent Cure, the percentage of lymphocytes was 97·5, with a total count of 20,000. This number of leucocytes has frequently been exceeded. The highest total count in our own experience is 35,000, and the highest percentage of lymphocytes is 85. The clinical manifestations in these cases are indistinguishable from the description given above of glandular fever, and the question arises of the identity of glandular fever and infective mononucleosis.

In 1921, when Morley and one of us went through the literature, no instance was found of a full blood count of a previous case diagnosed as glandular fever. In the case which was then described the lymphocytes rose to a percentage of 85, with a total count of about 15,000. This was the first demonstration of the presence of lymphocytosis associated with a clinical condition recognised as glandular fever. It was considered that the case was identical with the "infective mononucleosis" of Sprunt and Evans. A clinical condition which can be associated with such changes in the blood cells obviously requires recognition and consideration. It is certain that it is frequently overlooked, and it is probably by no means rare.

The special questions which arise are: (1) Is glandular fever a clinical entity? (2) Are glandular fever and infective mononucleosis identical? (3) The relation of these diseases to acute leukæmia and other conditions. Before discussing these questions an account will be given of an epidemic of glandular fever lately under our observation.

An Epidemic of Glandular Fever.

The outbreak occurred in a school for boys between the ages of 8 and 13 years. The school was managed on the usual lines of the best class of preparatory school. The school of 30 boys returned from the holidays on April 27th, 1921. Among the staff was a master, Mr. G., aged 23 years, whose previous movements have been traced without revealing any contact with cases suggestive of glandular fever. On May 12th his neck became visibly swollen on the left side, and the throat was sore, but there was no exudation. Constitutional symptoms were very slight. The prominent swelling subsided in a few days, but the glands remained palpable for a considerable time. Some swelling of the glands was present several days before the 12th, but the date of onset is uncertain.

Also on the same day a day boy was seen in his own home with scarlet fever; his brother (J. B., Case 13) was kept away from school. In consequence of this case of scarlet fever watch was kept in the school for any occurrence of sore throat. On the 23rd two boys reported sick with swelling of the neck and sore throat. Four more cases occurred in the next four days, the last of the six being on the 27th. The clinical condition of all the boys was similar—viz., marked enlargement of the cervical glands, little tenderness, moderate pyrexia, and slight constitutional disturbances. No rash developed. There was no tonsillitis, but in some instances the fauces were reddened. The outbreak was considered to be glandular fever.

No further cases occurred until June 5th, an interval of 9–14 days. On this and the following day 14 more cases developed. Among these was the brother of the boy with scarlet fever, who had returned to school on May 23rd, 14 days previously. Four more cases occurred subsequently, the last being on June 10th. The total number was 24, but it is probable that all the others were slightly affected. Several of the boys had had whooping-cough, mumps, scarlet fever, and measles. The clinical condition, especially in the first group, exhibited the typical manifestations of glandular fever as described above. The epidemic was mild, and constitutional disturbances were usually slight. In no instance did the temperature reach 103°, and in only three boys did it exceed 102°. There was no instance of rigors, sweats, or cough. A transient erythema localised to one flank developed in one boy who had been leaning for a long time on

* A paper read before the Section of Medicine of the Royal Society of Medicine on April 24th, 1923.

that side, but otherwise there were no rashes. There was a distinct difference in the severity of the first group and the later cases. Of the first group of six, glandular enlargement may be classified as marked in three (Cases 1 to 3), moderate in two (Cases 4 and 6), and slight in one. Of the second group of 18, as marked in two (Cases 7 and 20 in relapse), moderate in six (Cases 11 to 14, 18, and 23), and slight in 10.

Glandular Enlargement.—In all cases this was greatest in the neck. Large visible swellings were present in those classified as marked. In these the main mass was in the usual site, deep to the sterno-mastoid muscle, but other glands in the neck were also enlarged. The prominent swelling was in every case initially unilateral. In these marked cases the swelling usually occurred very rapidly, within 24 hours, and the temperature was at its maximum at the onset. In some instances there were a few preliminary days of malaise. The incidence on the right and left sides was about equal. Pain was slight and often absent, though when large a mass was usually, but not always, somewhat tender on palpation. In the less severe cases the development of the glandular enlargement was more gradual, and was equal on the two sides. Owing to the careful watch which was being kept the cases were recognised very early. In several instances glandular enlargement was very slight at first, and while under observation increased for several days. In these instances the temperature was usually normal, or indeed subnormal, when first recorded and rose with the increase in the size of the glands. The axillary glands were palpable in all the severer cases and some of the milder examples, but never formed a visible mass, and were not tender. The mesenteric glands were palpable in a considerable proportion of the slighter cases. Abdominal pain occurred in several, in one instance suggesting appendicitis. In no case was the parotid affected. In several the superficial submaxillary lymphatic gland was visibly enlarged. The mass of glands diminished rapidly in size and was rarely visible after five or six days, but glands could be recognised on palpation after several weeks. In no instance did suppuration occur, though we feared at one time that it would do so in Case 2.

Fauces.—In no instance was there any exudation on the tonsils. In a certain number the "throat" was complained of, and in these the fauces were reddened profusely and appeared dry, and in several a tonsil was definitely enlarged. In many cases the fauces were unaffected. Several of the boys had had their tonsils removed previously.

Epistaxis.—This occurred in eight cases (Cases 2, 7, 8, 14, 21, 23, 24, and in 20 during relapse). In Case 7 it was profuse and repeated, and in Cases 14 and 20 it occurred several times. It was not confined to the onset. With regard to other symptoms, constipation was not a difficulty, and there was no instance of either diarrhœa or vomiting. The spleen was palpable in only one case (Case 10); the enlargement persisted until the end of the term, but we have since found that another factor was responsible for this. There was no instance of nephritis.

Relapses.—Definite relapses occurred in two instances (Cases 1 and 20); in Case 1 the boy had been taken home for convalescence, but owing to a recurrence of glandular enlargement and pyrexia the parents sent him back on June 25th, four weeks from the onset. In Case 20 the relapse occurred on July 1st, 25 days from the onset. The initial attack was slight and the temperature did not exceed 99·5°. On July 1st the temperature rose suddenly to 102·5°, and the glands enlarged. They reached a maximum in three days, forming prominent swellings on both sides of the neck. The temperature was over 100° for nearly two weeks. In Case 14 there was a slight relapse 21 days after the onset. Until the end of the term it was found that the boys were easily tired and somewhat lethargic both in work and in games, but recovery was finally complete in every instance. Treatment was symptomatic. All the boys are now in good health, two years later.

Examination of the Blood.—There were several difficulties in these examinations. It was necessary to avoid any appearance of "experimenting" on the boys. Some of the earlier cases also were removed by the parents after a few days in order to convalesce

TABLE SHOWING BLOOD COUNTS OF TWENTY-ONE CASES OF GLANDULAR FEVER.

Case.	Date of onset.	Date of blood count.	Leucocytes per c.mm.	Polymorphonuclear neutrophils.	Polymorphonuclear eosinophils.	Lymphocytes.	Large mononuclears.
1. M. R. ..	20/5/21	29/5/21	5,100	63·5	2	31	3·5
		6/7/21	9,500	45·5	3·5	43·5	7·5
		15/7/21	8,600	48·5	4	38·5	9
2. J. R. ..	23/5/21	29/5/21	10,600	84	1	9·5	5·5
		6/6/21	9,600	67·5	2·5	26	4
		18/7/21	6,800	57·5	1	37	4·5
		23/3/23	—	65·5	3·5	28	3
3. S. D. ..	24/5/21	29/5/21	5,000	74·5	1	15	9·5
4. A. R. ..	25/5/21	29/5/21	13,800	28·5	2	64·5	5
		23/3/23	—	68	2	24	6
6. J. J. R.	27/5/21	29/5/21	7,800	50·5	3	43·5	3
		23/3/23	—	61	4	31	4
7. F. F. ..	5/6/21	18/6/21	8,300	52	1	37·5	9·5
8. C. K. ..	5/6/21	18/6/21	11,500	39	6	51·5	3·5
10. X. ..	6/6/21	18/6/21	4,200	44·5	3	50·5	2
		17/7/21	—	46	5	44	3
		23/3/23	—	50	2	45	3
12. D. N. ..	6/6/21	18/6/21	8,500	42·5	4·5	51·5	1·5
		23/3/23	—	58·5	1·5	34	6
13. J. B. ..	5/6/21	7/6/21	7,400	56·5	4·5	36	3
		23/3/23	—	53	2	41	4
14. G. H. ..	5/6/21	7/6/21	5,200	60·5	2·5	33·5	3·5
		19/6/21	13,500	36·5	3	56·5	4
		30/6/21	11,000	48·5	4·5	44·5	2·5
		15/7/21	6,600	52	3	42	3
15. K. H. ..	5/6/21	7/6/21	5,700	56·5	3·5	34	6
		19/6/21	8,600	42·5	3·5	49·5	4·5
16. C. D. ..	5/6/21	7/6/21	5,000	64·5	5	27·5	3
17. C. R. ..	5/6/21	18/6/21	—	44·5	5·5	44	6
18. M. A. ..	6/6/21	7/6/21	13,400	37·5	2·5	54	6
		23/3/23	—	52	1·5	43·5	3
19. H. P. ..	5/6/21	7/6/21	6,800	57	4	34·5	4·5
		23/3/23	—	69	1	26·5	3·5
20. R. B. ..	6/6/21	18/6/21	10,300	42	3	51	4
		17/7/21	7,000	50·5	0·5	46	3
21. J. R. ..	9/6/21	19/6/21	8,800	50	1·5	42·5	6
		23/3/23	—	49·5	2	43	5·5
23. T. H. ..	10/6/21	19/6/21	6,600	50·5	3·5	41·5	4·5
C. R.	10/7/21	12/7/21	18,000	26·5	3	65·5	5
		28/7/21	9,000	45	2	47·5	5·5
		8/4/23	—	65·5	1·5	28	5
C. H.	1/12/22	15/12/22	35,000	35	—	62	3
		20/12/22	24,000	59	—	35	6
		28/12/22	11,600	48·5	2	45	4·5
		15/1/23	7,800	46	3	40	11
		12/4/23	7,600	49·5	0·5	43	7

NOTE.—The numbered cases occurred in the epidemic. No examinations of the blood were made in Cases 5, 9, 11, 22, and 24.

at home. A further point was that we were unaware that the lymphocytosis may take time to develop, and also that it may be very transitory; marked changes may occur in a few days. Longcope has referred to this in his article on Infective Mononucleosis. It is evident that a single blood examination may not show any very distinctive change. It was impracticable to take frequent counts on 24 boys, and it would probably have been better to have concentrated on a few cases. Blood counts are recorded in 19 cases. Case 10 must also be excluded as another factor was present. In the records the red blood cells and hæmoglobin are omitted; there was no appreciable degree of anæmia in any instance. The basophils have also been added to the polynuclear neutrophils. In no case was their normal percentage increased and the error is negligible. In no instance was there the degree of total increase of white cells and high percentage of lymphocytes which is recorded in many of the sporadic cases. There is, however, definite evidence of lymphocytosis. The greatest degree occurs in Case 4, who was temporarily removed by his parents a few days later, and in Case 14. It is also distinct in many of the others—e.g., Cases 8, 18, and 20. Case 14 exhibits the development of lymphocytosis. Case 2 is of interest; on May 29th the mass of glands was tender, the separate glands could not be recognised, and the appearance suggested that pus would form. This was the only case in

which we suspected it. It is noteworthy that a polynuclear leucocytosis was present. Suppuration, however, did not occur, though the glands took much longer to subside than in the others. For purposes of comparison blood films have been recently obtained from several of the boys.

M. D., aged 6 years, daughter of the practitioner in medical charge of the school, developed glandular fever on June 10th. She had not been in contact with any known case, which suggests that the infection was conveyed by her father. It must, however, be stated that other cases were occurring in the neighbourhood, and a typical example was seen in consultation with another doctor. The daughter's attack was mild, and she was shortly convalescent. She was then allowed to go to a garden fête on June 29th. Here, contrary to orders, she was kissed by one girl friend, C. R.; this friend alone of those at the party developed glandular fever. Malaise commenced on July 10th, and by July 12th the cervical glands formed a prominent mass; the spleen was palpable, and the temperature 105°. The symptoms were characteristic of glandular fever, and severer than in any case at the school. Two blood counts are given of this case, the lymphocytes reaching 66 per cent. in a total count of 18,000 leucocytes. The attack followed the usual course and recovery was complete.

Sporadic Cases.

In addition to this epidemic eight sporadic cases have been seen which answered to the characteristics of glandular fever. In two instances hæmorrhagic nephritis was present, which brought the patient under observation. Several less definite cases have also been seen. The following are notes of a recent well-marked example:—

C. H., male, aged 3 years, admitted to the Royal Northern Hospital on Dec. 11th, 1922.

History.—Measles. Family history: unimportant. Present illness: for ten days slight malaise and swelling in the right side of the neck and right groin. Passed blood in a stool on day of admission; bowels previously normal.

Condition on Admission.—Face flushed, did not appear ill, no cough, temperature 102°, pulse 118, respirations 32. On right side of neck a prominent swelling due to enlarged glands; apparently not tender on manipulation. Right submaxillary lymphatic gland also enlarged. Right tonsil enlarged, but no exudation and no difficulty in swallowing. Teeth in good order. A few glands in axilla and groin. No mesenteric glands palpable. Liver and spleen not palpable. (Dr. S. W. Harlow, the house physician, is certain that he felt the spleen one day.)

Progress of Case.—Temperature fell to 99° in six days. The prominent swelling in the neck subsided in about two weeks. The submaxillary gland diminished more slowly. Cultures from the fauces were negative for diphtheria bacilli. Recovery was finally complete.

Examination of Blood.†—It will be seen that there is a high degree of lymphocytosis, both relative and absolute (Dec. 15th). On the 20th the percentage of polynuclear cells had risen to 59 per cent., practically owing to the rapid fall in lymphocytes. Subsequently the number of polynuclear and mononuclear cells were about equal, and resembled many of the examinations in the epidemic cases.

The following case may also be recorded:—

J. K., female, aged 9 years. Chicken-pox developed on June 13th, 1922. Doing well until the 19th, when respiration became very rapid and temperature rose suddenly.

Condition on Examination.—First seen on the 20th. Temperature 104°, pulse 120, respirations 40. Looked extremely ill and distressed. Mentally clear; no cough; some cyanosis; no local pain. Became very distressed if moved. Lungs: percussion note definitely impaired at left apex and right base. Breath sounds little affected. No adventitious sounds. The condition was puzzling, but it was suggested that pneumonia was developing.

Progress of Case.—On the left side dullness extended in about 24 hours to the whole lung. Breath sounds were broncho-vesicular, never tubular. No adventitious sounds developed either here or elsewhere in lungs throughout the whole course. No sputum; spleen never palpable; no enlarged glands; fauces clear. After three or four days a slight cough developed, not paroxysmal and never troublesome. Dullness on left now cleared rapidly, at the same time becoming more extensive and definite at right base. No displacement of heart; breath sounds audible and comparatively little altered. About this time very severe abdominal pain commenced, principally in the right upper quadrant. At this stage the patient was seriously ill, the temperature remaining over 104°, pulse about 140, and respirations rising to 50. No diagnosis was suggested which fitted the symptoms and signs satisfactorily. On the sixth day the temperature began to fall slightly.

The next day a younger brother, W. K., rapidly developed a large mass of glands on the right side of the neck. The condition appeared characteristic of glandular fever, and ran the usual course. The diagnosis was then made that in the girl's case there was enlargement of the mediastinal glands with resulting pressure on the bronchi and pulmonary collapse. The abdominal pain would be consistent with the frequency of these symptoms in glandular fever. The girl made a slow but uninterrupted recovery, the symptoms gradually diminishing, and both children are now in good health.

Discussion.

(1) *Is Glandular Fever a Clinical Entity?*—The description given at the commencement of this article applies, practically without variation, to nearly all the severe cases both under our observation and in the literature. It is accurate for the severer cases in the epidemic, for M. D. and for her friend C. R., for the sporadic cases which we have seen, including C. H., for the case published by Morley and one of us in 1921, for Pfeiffer's cases, and for cases since recorded in various countries. It is also accurate for the cases recorded as "infective mononucleosis," as "acute lymphatic leukæmia with recovery," for nearly all the cases of "lymphocytosis due to sepsis," and many cases under similar titles. Atypical and milder cases certainly occur, particularly in adults, and it is noticeable that the later cases in the epidemic were milder and slower in development than the earlier ones. If, for example, we consider the case C. H., it would, we think, puzzle a sceptic to find any other recognised entity under which it could be classified. The symptom-complex is characteristic, distinct from other diseases, and in our opinion sufficient to establish glandular fever as a clinical entity. In typical cases the diagnosis in fact is simple.

(2) *Are Glandular Fever and Infective Mononucleosis Identical?*—It has been stated above that the description of symptoms, progress, and prognosis applies equally to cases recorded under these two titles. Clinically they are indistinguishable. The proof that two separate conditions exist would have to rest on typical cases in which the blood had been followed through the course without the presence of lymphocytosis. No such evidence exists at the present time. It must be noted that it is not impossible for an occasional case to show polynucleosis: this occurred in Case 2 of our epidemic in which we thought clinically that the glands would suppurate. No doubt these acutely enlarged glands may become secondarily affected with pyogenic organisms, and suppuration occasionally occurs. A single count may be deceptive, and it is difficult to know what interpretation one would have put on the blood count on Dec. 20th in the case of the male aged 3. We consider that the evidence justifies the conclusion that an absolute lymphocytosis is the normal occurrence in glandular fever, and that glandular fever and infective mononucleosis are identical.

(3) *Nature of the Mononuclear Cells.*—In nearly all our cases it was very difficult to classify many of the cells as small or large lymphocytes. The main mass of protoplasm is usually greater than is normal in small lymphocytes and stains more deeply. The nucleus is less regular, and is frequently notched and often eccentric. There are no nucleoli. A considerable number of typical lymphocytes are always present. These abnormalities in the lymphocyte have been carefully described by observers of infective mononucleosis and also by previous recorders of such cases. The descriptions are practically all similar, and apply to other cases of glandular fever which we have seen. The nucleus of the most atypical cells have some resemblance to a small-sized Rieder nucleus. It was noticeable that in Case 1 during the relapse the mononuclear cells were

† For the examination in this case we are indebted to Dr. E. H. Shaw and Dr. P. O. Ellison. For all others we were personally responsible.

mainly typical large lymphocytes, the differential count on July 6th, 1921, being: large lymphocytes 38·5 per cent., small lymphocytes 5 per cent. In agreement with Longcope, Sprunt and Evans, and others, we consider that the cells are lymphoid in origin. These points are of interest to hæmatologists, but they are not of great importance clinically. We regard the cells as slightly immature lymphocytes. Longcope states that "the leukocytosis is dependent entirely upon an actual increase in the non-granular forms of mononuclear cells." This is almost, but not quite, invariably so. Thus in one of Longcope's cases (Case 6) there was at one time a leucocytosis of 26,200, with 60 per cent. of polynuclear neutrophils. In the case of C. H. here recorded, there were present on Dec. 15th 12,000 polynuclear neutrophils, and on Dec. 20th 14,000. It may also be noted here that a leucopenia may occur. This is mainly due to diminution of granular cells. It is not uncommon for the total leucocytes to be within normal limits.

(4) *Relation to other Diseases.*—The condition we are considering is an acute, infectious, contagious, and transient disease producing an absolute and relative lymphocytosis. From this standpoint the number of diseases we have to refer to is very limited. The numerous chronic conditions which produce only relative lymphocytosis and not an absolute increase need not be considered.

(*a*) So many of the recorded cases had previously had whooping-cough that it cannot be considered that any connexion exists. The same argument also applies to mumps, scarlet fever, and measles, though, of course, in these diseases an absolute lymphocytosis does not occur.

(*b*) There is no evidence that an acute leukæmia is infectious, and so far as we know there is no record of an epidemic. The clinical condition in glandular fever bears no relation to the grave constitutional disturbances of acute leukæmia. Recovery is complete in nearly every case. The clinical differences between the two diseases are so extreme that it is incredible that they can be due to a common factor. Differences between the leucocytes in glandular fever and acute leukæmia have been described, in close agreement, by several observers. While agreeing with these from our own observations, we doubt whether a pathologist, from consideration of these points without other information, could at present give a definite diagnosis between the two conditions, though it may become possible to do so. We may perhaps note that one form of leukæmia in fowls has been proved to be transmissible to healthy animals by inoculation.

(*c*) In infancy there is a tendency for lymphocytes to increase under simple conditions which do not have this effect in older children or in adults, but this has no relation to glandular fever.

(*d*) Certain forms of generalised neoplasm are occasionally associated with lymphocytosis. The condition is neither transient nor infectious, and obviously has no relation to glandular fever.

(*e*) With regard to septic infections, it has been stated above that the fauces are frequently reddened in glandular fever. Sometimes a tonsil may be swollen. This is the usual limit of the changes and any definite tonsillitis is rare. Not uncommonly there is no obvious change and no complaint of sore throat. There is no evidence that oral sepsis or dental caries has any connexion with glandular fever. Sepsis is frequently stated to be a rare but occasional cause of absolute lymphocytosis. In our own personal experience we have never seen an example. So far as we can ascertain this is based almost entirely on articles by Türk in 1907, by Marchand and by Cabot in 1913, and by Deussing in 1918. Study of these articles reveals no evidence for the statement. The cases of which clinical data are given can be divided into two categories—cases of acute leukæmia which were fatal, and cases of glandular fever which recovered. A striking point in these articles is the frequent absence of any evidence of sepsis. Another point is the absence of recognition that in acute leukæmia the leucocytes are frequently not increased in number. In 24 cases of acute leukæmia, which Panton and one of us (H. L. T.) published in 1914,‡ there were 11 cases in which counts of under 10,000 were recorded, and six cases of counts under 4000. Absence of recognition of this leucopenia has led many writers to attribute the leukæmia to some subsidiary septic lesion. In our opinion the statement that sepsis occasionally produces lymphocytosis is without foundation.

(5) *Nephritis.*—The amount of blood which is passed has struck most observers, especially as the usual symptoms of nephritis are certainly generally absent. The prognosis is good. It is doubtful whether a typical attack of acute nephritis ever occurs; there is no record of such an occurrence in the literature, though the condition of the urine suggests that the kidneys must sometimes be definitely affected. Little is known about this complication, which is worthy of consideration from the standpoint of nephritis.

(6) *Degree of Infectivity.*—It is difficult to arrive at a conclusion on this point. Cases have been nursed in hospital wards without special precautions, but we have never seen an instance of infection in such circumstances. It is usually stated that the incubation period is commonly seven or eight days, but the epidemic here described suggests that it is more often 10 or 12 days.

Diagnosis.

In glandular fever attention may be directed especially to the mildness of the constitutional symptoms even when the temperature is high, to the rapidity with which the glands enlarge, to the very prominent mass which they often form, and to the absence of anæmia. In one of these cases (W. K.) it is certain that the glands were not enlarged to any extent in the morning, while in the evening they formed a mass almost the size of a fist.

Acute Leukæmia.—A diagnosis is not difficult on clinical grounds. In acute leukæmia the patient is seriously ill, while in glandular fever the constitutional disturbance is nearly always mild, especially in comparison with the enlargement of the glands. An equally important point is the absence of anæmia. On the examination of the blood it would be impossible in some of the cases for a pathologist to make a definite diagnosis between leukæmia and glandular fever, but, on the other hand, it is improbable that any clinician bearing glandular fever in mind would make a mistake between the two diseases. Even apart from recollecting glandular fever, leukæmia would rarely suggest itself. The medical man who sees a case thinks not of leukæmia but of mumps or of tonsillitis. He is usually somewhat puzzled, and while he is puzzling the glands subside and the patient recovers. Sometimes he removes a carious tooth, and recovery is ascribed to this. The transient nature of the marked swelling and the usual absence of severe symptoms is the reason why the blood is so rarely examined in a condition which is comparatively common.

Mumps.—Outbreaks of glandular fever and also sporadic cases are frequently diagnosed as mumps, or perhaps even more commonly as "aberrant mumps." We have never seen the parotid gland affected in glandular fever, but the pre-auricular lymphatic gland may enlarge, and the superficial submaxillary lymphatic gland often attains a large size. The absence of pain is a practical difference. A mistake in diagnosis between these conditions would in point of fact be of little importance.

Tuberculosis.—There is no doubt that some cases of glandular fever have been diagnosed as "acute tuberculous adenitis." The serious results of such an error are obvious. The recognition of the existence of glandular fever should be sufficient to prevent a mistake which may affect an important period in a child's life. The diagnosis of "acute Hodgkin's disease" has also been made.

‡ Quarterly Journal of Medicine.

Tonsillitis.—Septic tonsillitis is often extremely infectious. The constitutional symptoms are usually severe, suppuration is common, and there is a considerable mortality. Simple tonsillitis is, of course, very common, and if anyone who is subject to it contracts glandular fever there may be a co-existent tonsillitis, but the striking point in glandular fever is the slightness of the changes in the fauces compared with the marked enlargement of the glands. It is obvious that the causes of local sepsis in the scalp and elsewhere must be searched for and excluded as far as possible.

Conclusions.

1. Glandular fever is a clinical entity.
2. An absolute lymphocytosis is a normal occurrence.
3. Glandular fever and the condition described as infective mononucleosis are identical.
4. Recovery is permanent, and there is no relation to leukæmia, Hodgkin's disease, or tuberculosis.
5. There is no evidence that sepsis is a cause of absolute lymphocytosis.

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TRAUMA AS A POSSIBLE CAUSE OF BRAIN TUMOUR.

BY ERNEST S. REYNOLDS, D.L., M.D., F.R.C.P. LOND.,

EMERITUS PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF MANCHESTER; CONSULTING PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY.

IT is a common occurrence for parents to ascribe an injury to the head as the cause for mental deficiency, epilepsy, infantile diplegia and hemiplegia, anterior poliomyelitis and other nervous affections—such injuries, which most individuals suffer from sooner or later in greater or lesser degree, having, however, nothing whatever to do with the disease in question. The only exception to this would be a true traumatic epilepsy from direct injury to the motor cortex, or where a blow on the head, possibly only slight, seems to be the exciting cause of starting essential epilepsy in a predisposed subject.

One is thus prejudiced against considering blows on the head as causes of cerebral disease, including cerebral tumour. But cases arise from time to time which make one wonder whether injury to the head may not after all be a causative factor of brain tumour. Medico-legally this point is of the greatest importance. One may "think" a head injury has caused a tumour, but legally the opinion given must be beyond "mere surmise, conjecture, or guess."

Literature of the Subject.

On looking up authorities one is surprised to find how indefinite opinions are as a rule. Thus Gowers[1] says: "There is little doubt, however, that traumatic influences, falls and blows on the head, are occasionally the immediate excitants of a growth, since the symptoms have been observed to follow a blow, and the tumour is found to correspond in position to the seat of the injury. Such a relation has been observed in almost all forms of tumour, especially in syphilitic and tubercular growths and in sarcomata of the dura mater. . . . Apparently the nutritive changes consequent on a mere concussion may be the starting point of a tumour. In some cases local symptoms of irritation, which were continuous with those of a subsequent tumour, commenced two or three days after the injury. . . . But the cases in which a traumatic cause can be traced form a very small proportion of the total number and the extent of this influence may readily be overrated. It should be remembered that a fall may evoke symptoms which existed before the accident."

Ross[2] says: "Injuries of the skull act as exciting causes in the production of cerebral tumours. Several cases have come under my own observation in which the disease dated from a blow on the head, and the tumour in these cases frequently grew at a place corresponding to the seat of injury." Byrom Bramwell[3] says: "Traumatic injury is in some cases undoubtedly a proximate cause [of tumour], especially in the case of tuberculous, syphilitic, and gliomatous new growths." Van Gehuchten[4] says: "Dans certaines circonstances on tend à incriminer le traumatisme, surtout pour les gliomes et les sarcomes, mais l'influence du traumatisme sur l'éclosion des tumeurs cérébrales est loin d'être prouvée."

In considering this question I have gained much valuable information from Prof. James Ewing's book, "Neoplastic Diseases," and from it I take the following statements and references. He says:

"There seems to be no sufficient reason for denying the relation between trauma and many chondroma, osteoma, lipoma, fibroma or fibro-myxoma with which the history of a blow is rather common—also with the most striking forms of traumatic tumour, gliosarcoma and osteosarcoma where a definite history of injury is frequent. To establish relationship several classes of evidence are necessary, as is recognised especially by French statutes: (1) The authenticity and sufficient importance of the trauma; (2) previous integrity of the part; (3) a reasonable time-relation, three weeks to three years; (4) continuity of pathological changes or symptoms in the wounded part and the appearance of the tumour; (5) microscopic proof of the existence of the tumour. When a healthy adult receives a blow on the head, remains unconscious for days, never recovers full mentality, shortly develops signs of brain tumour, and dies in a few months of gliosarcoma—the liability is generally accepted as complete."

Gerhardt gives 10 in 60 reported cases; Adler[5] in over 1000 cases gives 8·8 per cent. as due to trauma, and details 118 cases of various types, illustrating many possible relations to trauma, some of them quite direct. Trauma may be a direct exciting cause of the tumour as shown by the injury causing a lesion of the dura or pia with affection of brain tissue. Less satisfactory and more numerous are those cases in which the tumour appears at some point remote from the injury. Starr assumes, probably correctly, that a cerebral hæmorrhage or contusion may pass directly into a tumour process.

Mr. Geoffrey Jefferson, hon. surgeon to the Salford Royal Hospital, who is specially interested in neurological surgery, tells me of the following case:—

A woman, aged 35, fell against a piece of machinery, striking the right side of the head; she ever after suffered from headaches over the vertex and then very severe in the sub-occipital region. She then commenced with occasional vomiting and sometimes to fall backwards, and her eyesight began to fail. When Mr. Jefferson first saw her six months after the injury, she could not stand without support, leaned heavily backwards, saying she was afraid she was going to fall on her face, said the room was spinning round from left to right. There was double optic neuritis and nystagmus rapid to right, slow to left; no ocular paralysis, but slight numbness of left face. A bilateral sub-occipital trephining was performed; no tumour was found, but she died the same evening from shock. At the autopsy a right-sided glioma involving the midbrain and with an extracerebral projection of growth which lay between the tentorium cerebelli and the upper surface of the right lobe of the cerebellum; the growth also involved the posterior part of the substance of the right hemisphere.

[1] Diseases of Nervous System, vol. ii., p. 490.
[2] Ibid., vol. ii., p. 416.
[3] Allbutt's Syst. of Medicine, first edition, vol. vii., p. 646.
[4] Les Maladies Nerveuses, p. 467.
[5] Arch. f. Unfallheil., 1897, ii, 189.

Mr. Jefferson tells me that he has had under his care about 1000 cases of injury of the head, civil and military, and of these has only seen three cases of brain tumour. He doubts if a single trauma can start a growth and thinks it more likely that when it apparently does so it is only by "stirring up" a growth which was already present.

Personal Experience.

I regret that I cannot give definite statistics of my own, but I can certainly say that very seldom in my personal practice have I been able to ascribe brain tumour to injury. The two following cases are of interest:—

CASE 1.—In November, 1898, a finely built man, aged 46, consulted me. Three years previously he had a fall on the back of the head while skating and he was stunned for a time but not definitely unconscious. Two years afterwards he commenced with pain at the back of the head with some giddiness. In July, 1898, he found his right foot would not quite respond to his will and in August he could not write as well as usual; in September he was somewhat unsteady in gait and had acute pain at the back of the head; then found a difficulty in pronouncing words and in clear articulation. He had no vomiting.

Condition on Examination.—When I saw him he was slightly unsteady in gait and when standing with the eyes closed reeled over backwards and to the right; there was pain and some tenderness at the back of the head; the right knee-jerk was more lively than the left, and there was some slight weakness of the right arm and leg; his speech was a dysarthria (not an aphasia); pupils and optic discs were normal; no tremors; but writing very irregular, and both hands ataxic and awkward on attempting fine movements.

Course of Case.—A diagnosis of a tumour of the middle lobe of the cerebellum was made. I saw him again in ten days when he told me he had had three sudden attacks of vomiting. A few days after this he became rapidly worse with some stupor, emotionalism, and standing and talking were impossible. The late Sir William Thorburn operated on Dec. 23rd, trephining the left side sub-occipital region; the dura mater bulged greatly into the wound and was opened on Dec. 25th with a great discharge of clear fluid but no tumour was found. The patient became more sensible for a few days, then coma set in and he died on Jan. 1st, 1899.

Post Mortem.—A soft myxoglioma, the size of an average walnut, was found in the middle lobe of the cerebellum, three-fifths of it being to the right and two-fifths to the left of the middle line.

CASE 2.—On May 22nd, 1922, I was called to see in consultation a well-built, healthy-looking Jewish gentleman, aged 35, and was told that on March 24th, 1922, he had been knocked down by a motor-car and received bruises on the right hip and right side of the head; he was stunned but able with assistance to get home, only about a quarter of a mile away. After a few days rest he went to Blackpool to convalesce, but returned no better.

Condition on Examination.—When I saw him he merely complained of tingling and numbness of the left side of body and limbs with some headache. He was very nervous about his condition and very emotional, thought the right side was also getting affected, and said he was sure he was going "to have a stroke and would become lifeless." A full examination, including, of course, the optic discs, revealed no abnormal physical signs and no loss of sensation could be detected, and I considered that he was a case of traumatic neurasthenia.

Course of Case.—He returned to Blackpool and while there began to lose power on his left side. On returning home he went to the Manchester Royal Infirmary and after examination in the out-patient department was considered to be a "functional" case, but he was sent into the wards and detained there for seven weeks. During this time the left hemiplegia slowly became worse and he was taken home by his wife on August 3rd, 1922, and I was asked to see him again on that day. He was then very ill, slightly delirious, with total left hemiplegia and hemianæsthesia, immobile pupils, and double optic neuritis. On August 14th Mr. Jefferson trephined over the right motor area, there was intense bulging of the brain into the wound, but nothing definite was found. The patient died the next day.

Post Mortem.—A soft gliosarcoma was found in the right optic thalamus and invading the internal capsule. At the inquest it was considered that the tumour had no connexion with the accident, but the friends commenced a civil action which was settled out of court by the insurance company paying £550.

It is most difficult to decide whether these cases really show any causal relation between trauma and tumour, or whether they are examples of that frequent and incalculable factor in estimating causation—namely, coincidence.

I have brought this question forward in the hope that others will make full inquiry regarding any comparatively recent injury to the head in cases of brain tumour and to elicit the experience of others.

Clinical and Laboratory Notes.

TWO CASES OF ENCEPHALITIS LETHARGICA WITH SCARLATINAL DESQUAMATION.

BY J. LUMB, M.B., B.S. DURH., D.P.H.,
LATE MEDICAL SUPERINTENDENT, EAST DENBIGHSHIRE FEVER HOSPITAL.

Two cases of encephalitis lethargica under my care have both presented the feature—unusual so far as I am aware—of desquamation closely simulating that of scarlet fever.

CASE 1.—A young man, aged 17, employed as a fitter at a large omnibus garage, complained first of pain in right knee, thought to be a sprain caused while cranking up a 'bus. A week afterwards he developed acute mental symptoms, delirium and excitability, part of the delirium taking the form of "occupational soliloquies." Removed to the union infirmary as a mental case, and remained there for several days. It was then noticed that his hands were undergoing the typical "glove" peeling so characteristic of severe cases of scarlet fever. His toes also showed signs of desquamation. I was requested to see him with a view to confirming the diagnosis of scarlet fever. After some hesitation I agreed to admit him to the Wrexham Fever Hospital, as there was an indefinite history of vomiting and sore throat some weeks previously. This has since proved incorrect.

On admission, on March 2nd, 1923, to the East Denbighshire Fever Hospital, all acute mental symptoms had disappeared. He was very somnolent, waking up only when roused at meal-times, &c. Superficial and deep reflexes were present, but sluggish. There was incontinence of urine. Sane answers given to questions, but in a slow and hesitating manner. Memory very poor. Desquamation on hands complete in about a week, but contrary to what would have taken place in scarlet fever the dead skin came away in small pieces and left behind a roughish surface. No desquamation elsewhere except over a small area in the dorsal region of the back. Somnolence and lethargy lasted for two weeks, and was followed by a short period of irritability. Recovery is now almost complete, except for a certain listlessness and slurring speech. Described by his mother as having been a very bright and cheerful boy before this illness.

CASE 2.—Admitted to the Wrexham Fever Hospital on March 10th, 1923, from the Wrexham General Infirmary as a case of encephalitis lethargica. He appeared to be a fairly typical case with marked somnolence, ptosis, nystagmus and diplopia, waking up when spoken to, and answering questions in a slow monotonous voice. Quite fair appetite; reflexes normal except Babinski + in the right foot. Incontinence of urine at first, ceasing as lethargy passed off. Shortly after admission his feet, hands, and legs commenced to desquamate, not quite so markedly as in Case 1, but sufficiently so to make it a fairly typical "glove" desquamation of scarlet fever. As in Case 1, there was no peeling on the neck and chest. After peeling the palmar surface of the hands and the plantar surface of his feet presented the same rough appearance as in Case 1. This case is running a protracted course, but practically all visible skin changes have now ceased.

I have been unable to find any similar case of such marked desquamation recorded in the literature on encephalitis lethargica. In the report of Dr. A. C. Parsons to the Ministry of Health there is, however, what may be a parallel case (Case 673/1919). Here it had been noted that there was a faint rash on the chest, and this was followed by desquamation—the inference drawn being that the case was one of encephalitis lethargica combined with scarlet fever. I venture to suggest in the light of the two cases I

have had under my care that desquamation may be added to the already manifold signs of encephalitis lethargica. The close similarity of the desquamation to that occurring in scarlet fever might deceive anyone not well acquainted with the latter disease; but, as I have pointed out, the appearance of the skin after desquamation had taken place was sufficient to show that the peeling was not that associated with scarlet fever.

London.

A NOTE ON A HELMINTH SURVEY OF A GURKHA BATTALION.

BY R. C. WATTS, M.D. LIVERP., D.P.H., D.T.M., CAPTAIN, I.M.S.

THE original idea of the work undertaken was an investigation of ankylostomiasis among Gurkha soldiers who come from a part of India where the disease is prevalent.

Procedure.—A number of labels bearing men's names, numbers, &c., were distributed daily amongst the Gurkha Rifles. These men were instructed to defæcate into clean latrine pans set apart for them. After defæcation the man handed over his label to the sweeper, who took a specimen of the fæces in a gallipot, labelled it, and sent it to the laboratory. In this way the whole unit was examined.

The concentration methods were not used as they take too long, and are not practicable with restricted facilities. The ordinary method of dissolving a loopful of fæces in normal saline and putting under a cover-slip was used. The results are summarised as follows: Number of cases examined, 561; number of cases infected, 139 (ankylostomiasis, 8·5 per cent.; ascariasis, 12·2 per cent.; trichocephaliasis, 4·6 per cent.).

The routine method used in the laboratory was as described above, but an observation was also made as to the effect the harbouring of worms had on the human host. The cases can be divided into three categories: (1) Cases having infection without being inconvenienced or showing any signs whatever; (2) cases having some other diseases which may mask signs of helminthic infection; (3) cases in which anæmia is marked. Though no definite figures can be given, a rough estimate under the above classes is: (1) 81 per cent., (2) 17 per cent., (3) 2 per cent.

Results.—Recruits taken by themselves showed an infection with ankylostomes in 20 per cent., but owing to good sanitary conditions in the lines individuals are not reinfecting themselves or infecting others. Probably this is the reason why the men with longer service show a smaller percentage of infection than the younger men. Though it is well known there are many who harbour ankylostome worms and enjoy good health, yet at some time or other the parasites may produce serious effects. For this reason treatment was carried out. Men were taken into hospital and treated with 60 gr. doses of thymol. The stools were examined for worms, which were collected for examination. It was found that all the worms were *Necator*, and that on the average three doses of thymol were required before a patient's stools were free of ova.

In conclusion, I have to thank Lieut.-Colonel H. M. Cruddas, I.M.S., for valuable suggestions.

Abbottabad, India.

QUEEN'S UNIVERSITY OF BELFAST.—The Marquis of Londonderry has been elected Chancellor of the University in succession to the Earl of Shaftesbury, resigned. The election, which rests with the Members of Convocation, was unanimous.

THE FLOWER HOUSE, CATFORD.—On Saturday, July 14th, Sir Henry Fielding Dickens, K.C., will lay the corner stone of an extension to accommodate invalid ex-officers at the Flower House, Catford, S.E. 6, when there will be a reception by Major Pat à Beckett and Major and Mrs. Walter à Beckett at 4.30 P.M.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

SURGERY OF THE HEPATIC AND COMMON BILE-DUCTS.

A MEETING of this section was held on June 27th, with Mr. JAMES BERRY, the President, in the chair, when Dr. WILLIAM J. MAYO opened a discussion upon this subject. Dr. Mayo's paper was published in THE LANCET last week, and the contributions of Sir BERKELEY MOYNIHAN and Mr. JAMES SHERREN, who followed, will be found on pp. 4 and 7 of our present issue.

Mr. G. GREY TURNER referred to

Cases of Surgical Injury to the Larger Bile-Ducts

which had occurred in his own practice. Case 1 was operated on for gall-stones; the gall-bladder and duodenum were wrapped in omental adhesions, during the separation of which an unsuspected diverticulum of the duodenum was opened. This was temporarily clamped and the gall-bladder, which was full of stones and apparently of hour-glass form, was removed after exposing what was thought to be the cystic duct. After the removal of the gall-bladder there was a leakage of bile, and investigation showed that the common duct had been inadvertently divided. The duodenal diverticulum, which contained a pancreatic process in its wall, was excised; as this caused considerable narrowing of the gut, the pylorus was occluded and a posterior gastro-enterostomy was performed. Investigation of the bile-duct injury then showed that at least an inch had been excised, but the ends were easily brought together and united by end-to-end suture. The patient unfortunately died of a duodenal and pancreatic fistula four weeks after operation. At the necropsy the bile-duct was found intact, although the parts were much altered by auto-digestion; other diverticula were found springing from the duodenum and upper three feet of the jejunum. Had it not been for the other complications the patient would probably have survived the injury to the bile-duct.

In Case 2 cholecystectomy was performed for gall-stones, what was taken for the cystic duct being ligatured in the usual manner. A biliary fistula appeared after operation, but this had healed on discharge from hospital three weeks after operation. After discharge the biliary fistula recurred, but healed after a month, the healing being followed by jaundice and severe pain. Four months after operation the patient, now deeply jaundiced, was readmitted, and after a few days' preparation the abdomen was reopened. After freeing the region of the biliary ducts from adhesions, the lower end of the common bile-duct, which had been divided in the first operation, was found just above the duodenum. The upper end was, after great difficulty, identified in a mass of dense scar-tissue under the liver by puncture with a hypodermic needle. During this dissection the cystic artery was injured and had to be secured by a clip, which was left in situ at the end of the operation as it was impossible to ligature the vessel. The ends of the duct were then fairly easily approximated over a rubber tube after Sullivan's method. The patient, who had stood the operation quite well, died in 48 hours from hæmorrhage into the abdominal cavity and into the cellular tissue about the hepatic omentum, duodenum, and pancreas. The junction of the bile-duct was satisfactory, but the rubber tube had been introduced too far, and had passed up the left hepatic duct to the centre of the liver. It was obvious that a mistake had been made in attempting to perform an anastomosis in the presence of deep jaundice; the indication was to open and drain the hepatic duct, and to leave the repair till a later occasion.

Case 3 was that of a stout female, aged 41, operated upon for recurrent gall-stones, cholecystectomy and gastro-enterostomy being performed. A bile fistula persisted for two weeks, and after it closed the patient became thin, developed a pale-lemon colour, and passed clay-coloured stools. Occasionally she had pain with pyrexia and definite jaundice, although in the intervals she was fairly well. A diagnosis of an increasing stricture of the common bile-duct became obvious and the biliary apparatus was explored at a second operation nearly two years after the first. The common duct was, with some difficulty, identified and opened below the obstruction, where the lumen was so narrow that a fine probe only could be passed. The stricture was divided and the duct reconstructed by a modification of Sullivan's method. Bile was discharged from the wound for a fortnight, and even when the fistula closed did not find its way into the intestine in any quantity. Three months after the operation the patient was, however, much improved; the fæces were of normal colour, but the tube had not appeared. The remarkable feature of the case was the fair health of the patient in the interval between the two operations, in spite of a severe stricture of the common duct.

Case 4, a male, aged 36, had a cholecystostomy performed as an emergency operation in February, 1922, his condition at that time precluding any more extensive operation than the removal so far as possible of stones and drainage. Although recovery followed, further attacks of gall-stone colic necessitated a further operation three months later. On this occasion cholecystectomy was performed with considerable difficulty owing to rigidity of the powerful abdominal muscles and the obscurity of the parts from adhesions. At the operation it was recognised that a small portion of the common duct had been excised; this opening was used to extract stones from the lower end of the duct and was then sutured. On the removal of the support behind the loin the parts came well together, but some bile leakage persisted for three weeks; after four weeks he was able to return home apparently cured. Shortly afterwards the wound reopened and discharged bile, and in spite of this he had pyrexia and persistent jaundice. Accordingly he was readmitted ten weeks after the last operation. After three days spent in preparation, the abdomen was again opened. There were very dense adhesions between the under surface of the liver and the situation of the bile-ducts, and the sinus had to be traced through these to the upper end of the common duct. The latter had become obliterated at the site of the injury and all the bile was finding its way through the fistula. In this case the lower end of the duct could not be identified, so the upper part was therefore anastomosed to the duodenum which had to be mobilised to allow union to be made without tension. The crescentic opening in the duodenum wall was at least half an inch in length and mucous membrane was united to mucous membrane. A small rubber drain was brought to the surface from the neighbourhood of the union. Two days after the operation there was distinct jaundice, but this soon passed off and in three weeks the patient was very well, the wound was healed, and the fæces contained a normal amount of bile. Two months afterwards he had a slight attack of pain with transient jaundice. These attacks were repeated and five months after operation he had a severe one accompanied by a rigor. This unfortunate man was accordingly readmitted in January, 1923. He was then slightly jaundiced following a recent attack. Because of the intermittent nature of the attacks and the comparatively good condition between them, the question of the possibility of further stones in the common duct was raised, and yet another operation was advised and was carried out on Feb. 3rd, 1923. The region of the duct was exposed with difficulty. No stones were felt and the duct was not dilated enough to identify or to incise. The duodenum was therefore opened and after great difficulty the new opening of the common bile-duct was found. It was very tiny, only admitting a fine probe; this was followed by bougies, until the opening easily admitted a No. 10 catheter. A portion of the latter was left in situ and fixed by a stitch. An artery was divided which could only be secured by clips left in situ. During convalescence there was slight bile leakage, pyrexia, and a tinge of jaundice. Early in June he was very well.

Points Affecting the Repair of Surgical Injuries.

These cases were quoted in order to demonstrate how much care should be exercised to avoid injury to the bile-ducts, and how, in spite of opinions to the contrary, the tendency after injury to the ducts was towards obliteration or stricture rather than towards restoration of function, even when immediate steps were taken to repair the injury. The multiplicity of operations described for the repair or reconstitution of the bile-ducts suggested that injury to them was not uncommon. Surgical injury could only be avoided by the identification of the hepatic and common ducts before the supposed cystic duct was clamped and divided. In dealing surgically with the larger bile-ducts the following facts should be borne in mind. (1) The ducts are elastic, and not only retract when divided but their ends also contract, thus favouring obliteration. (2) Except when fixed by inflammation they lie loosely among tissues which form a natural sheath in which hæmorrhage or extravasation of bile tends to be confined—the former aiding the obliterative process. (3) The mucous membrane has great recuperative power and tends to grow out along the duct, and is therefore very helpful in bridging a gap. (4) Ducts do not atrophy appreciably or become obliterated from disuse, but only as the result of inflammation. These considerations showed that the most important point in repair was to secure approximation of the ends of the ducts. The suture line should be the widest part of the duct, and too many sutures should not be employed as they were apt to cause narrowing. It was better to avoid the contact of any foreign body with the suture line. In these operations every possible aid to exposure should be employed; while the importance of the Mayo Robson position was universally recognised, the assistance given by the "reversed Trendelenburg" position was not so generally known.

Exploration of the Ducts.

He could not agree with his former master, Sir Berkeley Moynihan that it was unnecessary to open the common duct when symptoms pointed to the presence of stones, as small stones and soft detritus might easily escape detection by external palpation. When the duct was not large enough to admit the best probe, the finger, he employed the Desjardins forceps both for exploring the duct and for the removal of stones. The operation could not be considered complete, as the opener (Dr. Mayo) had taught many years ago, until a sound had been passed from the opening into the duodenum; for this purpose the speaker employed a female bladder sound three-sixteenths of an inch in diameter, thus dilating the opening of the bowel and ensuring the escape later of any stones missed during operation. The success of this manœuvre was indicated by the common occurrence of one attack of colic during convalescence. While he was interested to hear the remarks of Dr. Mayo as regards suture of the opened ducts, his own experience led him to regard drainage as the safer proceeding in any case of doubt. The greatest advances in the surgery of this region of recent years had been rather in the choice of the time for operation and in the preliminary and after-treatment than in the actual operative technique. He was convinced that the two-stage operation would save lives in the very toxic or jaundiced cases, but the need for this measure was growing less with earlier recognition of gall-stone disease and earlier operation. Mr. Turner then described a specimen, shown at the meeting, of an enormous cystic dilatation of the common

bile-duct, due, he suggested, to valvular obstruction which acted in similar manner to the valvular obstruction of the ureter, producing hydronephrosis. He also suggested that the enormously dilated common ducts sometimes seen associated with only small gall-stones, or none at all, were congenital anomalies allied to the congenital dilatation seen sometimes in the colon or ureters without any obvious cause. A further anomalous condition he had seen was the leakage of bile from apparently intact ducts sometimes associated with pancreatitis but occasionally without. Mr. Turner also suggested that the investigation by making plaster or gelatin casts of the lumen of the common bile-duct, to discover or disprove the presence of pouches in which stones might be overlooked, might be a useful field of study for surgical anatomists.

Reconstruction of the Ducts.

Mr. A. J. WALTON said that in these days, when so many operations were being performed in this region, it was essential that surgeons should have a clearly defined line of procedure for reconstruction of the ducts. Such an operation might be required for several conditions.

1. *Accidental Injury to the Common Bile-duct.*—Pathological lesions of the gall-bladder frequently led to changes in the anatomy of the parts which normally showed considerable variations in the origin and course of the cystic artery and in the length and position of the cystic duct. These variations, normal and pathological, unless they were well known, frequently led to injury to the common duct in the operation of cholecystectomy, which was now almost universally advocated as the operation of choice in gall-stone disease. The cystic artery might lie in front of the cystic duct; its unexpected division and retraction into the gastro-hepatic omentum led to the obscuring of the parts by hæmorrhage, and attempts to clip the vessel in the depths of the wound might easily lead to the inclusion and crushing of the common duct in the grasp of the forceps. Again, the cystic duct and the common duct sometimes ran parallel and were closely adherent; in this case both ducts might be divided, the common duct being mistaken for a portion of the cystic duct. When it was the more usual practice to remove the gall-bladder from the fundus backwards tension upon the freed gall-bladder might result in a loop of the common duct being pulled up and completely excised. As a result of inflammatory adhesions Hartmann's pouch of the gall-bladder might be firmly attached to the common duct; an incomplete dissection would then lead to the division of the common duct in mistake for the cystic. The only way to avoid these accidents was to make it a definite rule that in performing cholecystectomy nothing was divided until all three ducts, the common hepatic, the cystic, and the common bile-ducts, had been exposed by an incision in the upper part of the gastro-hepatic omentum. It was equally important that the cystic or any abnormal artery should be ligatured before it was divided.

2. *Congenital Absence of the Cystic Duct* was a very rare condition which necessarily involved removal of a portion of the common bile-duct during the operation of cholecystectomy. This should be observed and the continuity of the ducts restored at the time.

3. *Early Pancreatic Obstruction.*—In cases of this kind, when the gall-bladder was the seat of inflammatory disease or contained stones, the operator might proceed to remove the gall-bladder, failing to recognise an obstruction to the common bile-duct lower down. Later the line of suture might give way, leading to a permanent biliary fistula. At the second operation the lower portion of the duct was collapsed and might be so fibrous as to be undiscoverable; some operation would then be necessary to unite the upper patent end of the duct to the duodenum.

4. *Advanced Cases of Chronic Pancreatitis and Carcinoma of the Head of the Pancreas.*—As a rule these cases were associated with deep jaundice, a distended gall-bladder containing dark bile, and a dilated common duct as well as a hard and nodular pancreas. Rarely, however, long-continued obstruction led to absorption of the bile pigments, so that the bladder and passages were filled with mucoid-like fluid; if the gall-bladder were aspirated this condition was liable to be mistaken for obstruction to the cystic duct and the common duct might be opened to settle the diagnosis. There was then a danger of leakage from the common duct even if the opening were closed by suture and the pressure relieved by a cholecystenterostomy. A second operation to cure the biliary fistula would show an atrophied and fibrous lower end of the duct, the upper part alone being patent.

5. *Combined Disease of the Gall-bladder and Common Duct.*—It was important to realise that a growth in the bile passages might coexist with gall-stones and even with a carcinoma of the gall-bladder. In Mr. Walton's 262 cases of cholelithiasis there were seven cases of carcinoma of the gall-bladder, ten of the common duct alone, and five of carcinoma of both the common duct and gall-bladder. Carcinoma might occur at the junction of all three ducts, in the common hepatic duct above the cystic duct, in the common bile-duct, or at the ampulla. In the former two cases cholecystenterostomy would not relieve the obstruction, and in the latter two cases cholecystenterostomy would only be suitable with a healthy gall-bladder; when the gall-bladder was diseased or collapsed the only feasible operation was the anastomosis of the duct to the duodenum.

6. *Obstruction of the Duct by a Scar.*—It was stated as an objection to the routine performance of cholecystectomy that the gall-bladder was no longer available for cholecystenterostomy should the common duct become obstructed later. Such obstruction was very rare.

Operative Technique.

The operations to be performed for any one of the above conditions were numerous, and would naturally differ according to whether the duct were dilated or leaking. The operations of choice were the following.

1. *Direct Suture.*—In cases of surgical injury to one of the ducts, and sometimes when a small carcinoma had been excised, this would appear theoretically to be the operation of choice. As a matter of practice, however, direct suture was often a matter of difficulty, the ducts being small and in the case of obstruction of uneven calibre, and for this reason suture was often conducted around a tube the removal of which was again difficult. Further leakage was not uncommon and stenosis was likely to occur; the latter had occurred in a mild degree in Mr. Walton's one case of the kind.

2. *Lateral Choledochoenterostomy* might be performed in those cases where the obstruction was low down and the duct considerably dilated, the duct being anastomosed to the duodenum. The main indication for this operation was the rare condition of congenital cystic dilatation of the common duct; it might also be performed in cases of obstruction from pancreatitis or carcinoma of the pancreas where the gall-bladder was not available for cholecystenterostomy owing to disease or its previous removal. The operation was not a very satisfactory one; it caused angulation of the duct with stress on the suture line, and the opening, being large, involved a risk of the passage of duodenal contents into the duct with the consequent risk of infection of the latter.

3. *Reformation of the Common Duct* was called for when considerable segments of the duct had been excised for a growth or fibrous stricture, or for fistula resulting from surgical injury unrecognised at the time. In the latter cases the structures were much obscured by inflammatory changes, and the lower part of the duct was often practically obliterated. Attempt

had been made to form a new duct from an autogenous graft of fascia later, but these operations were difficult and a portion of the graft was likely to fail. Practically every case could be treated by either direct or indirect implantation of the upper end of the duct into the duodenum.

(*a*) *Direct Implantation*, first performed by Dr. Mayo wherever possible was the operation of choice; the upper end of the duct was brought down and anastomosed to an artificial opening in the duodenum. The opening must be so devised as to be valvular; this was accomplished in Mayo's operation by making a somewhat circular incision in the duodenum thus producing a flap-like formation, and in other cases by burying the duct obliquely in the duodenal wall for some distance. Such operations were naturally only available when the duodenum was mobile—that is, when the operation was a primary one. It would appear to be essential that the opening should be valvular to prevent an ascending cholangitis. When the duodenum was not sufficiently mobile a loop of jejunum brought through the transverse mesocolon might be employed, but such a loop was unsatisfactory by causing traction upon the anastomosis.

(*b*) *Indirect Implantation.* — Sullivan's original method was to wrap omentum round a rubber tube implanted into the duodenum at one end and into the duct at the other, in the hope that a fistulous track would be produced and the tube passed later. Such operations were often unsatisfactory. The tube, failing to be passed, might become encrusted with calculous deposit, or the fistulous track might become stenosed after the tube had been passed. These drawbacks were now overcome by using a flap cut from the anterior surface of the duodenum in place of omentum. The technique of this operation, which was described in considerable detail, was comparatively simple, and the operation was available even when large gaps had to be bridged. The new duct was valvular and was lined with duodenal mucosa accustomed to the passage of bile. The rubber tube, which was held in place by only one plain catgut suture, was usually passed within a fortnight. The flap operation could by a simple modification be employed for those cases where the common duct was dilated from obstruction by chronic pancreatitis or carcinoma of the head of the pancreas, a lateral opening being made in the duct and anastomosed by means of the flap to the duodenum.

The PRESIDENT remarked briefly on the extreme importance of care and a knowledge of pathological anatomy in the operation of cholecystectomy or any other operation in this region.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

METASTATIC GONORRHŒA.

A MEETING of this Society was held at the rooms of the Medical Society of London on June 29th, Dr. F. N. KAY MENZIES occupying the chair.

The discussion on the metastatic results of venereal disease, reported in THE LANCET last week, was concluded, the subject being dealt with from the aspects of affections of the eye, the skin, the cardio-vascular system, and the kidney.

Mr. SYDNEY H. BROWNING and Mr. BASIL LANG dealt with

Gonococcal Affections of the Eye.

Mr. BROWNING based his contribution on his experience at Moorfields Eye Hospital during the last 14 years. Ten years ago, he said, gonococcal ophthalmia in newly-born infants was very common; to-day it was very rare, a remarkably sudden decrease occurring when, in 1920, there was extra supervision of and greater care by midwives. Most of the infants so suffering nowadays had a chemical irritation due to over-zeal, and this might be a seat of secondary infection by various pathogenic germs, conveyed, probably, by the family handkerchief. An enormous advantage in culture of the gonococcus was obtained by using Dr. P. P. Laidlaw's method of diminished oxygen tension, which he described. Vaccines he had not found of material benefit in any way to children with gonorrhœal ophthalmia. Despite appearances, patients must not be considered cured until the conjunctivæ were proved bacteriologically to be free of gonococci. In adults gonorrhœal ophthalmia usually resulted from an existing acute or subacute urethritis. Here, vaccine therapy in many cases diminished the frequency of ulceration. The urethra must be treated at the same time; and if only one eye was involved, the other must be protected. He did not know of a case in an adult in which the gonococcus had been recovered from either gonorrhœal conjunctivitis or irido-cyclitis. Pus existed in the conjunctiva in these conditions, but it had not been shown to contain organisms. They were probably toxic. As gonorrhœal iritis was a late sequel of gonorrhœa, it was not usually seen at first hand by the V.D. specialist, and it was generally treated as a purely local infection. He did not think it was set up by the presence of the gonococcus in the eye. Still, there was good reason for believing that the origin was gonorrhœal, for there was usually a history of gonorrhœa, there was a specific reaction to gonococcal vaccines, and a recurrence of the iritis followed prostatic and vesicular massage. Incidentally, he mentioned that he had neither seen nor heard of a case of gonorrhœal iritis in the female. Immediate vaccine therapy was indicated in all cases of gonorrhœal iritis, and it should be pushed to the extent of securing a considerable reaction in the eye. Detoxicated vaccines had not yielded any results in his hands.

Mr. BASIL LANG said there were three types of metastatic infections of the eye from gonorrhœa: iritis, scleritis, and choroiditis. The first and second were uncommon from this cause, and choroiditis without scleritis quite rare. Usually a joint affection preceded any of the three. The distinguishing feature of this iritis from other forms was a clear gelatinous exudate into the anterior chamber, and the iritis was always associated with congestion of the ciliary vessels, and easily elicited tenderness over the ciliary region. The scleritis was acute in onset, and there was pain with chemosis. The choroiditis was also very sudden in onset, and the vitreous early contained many "floaters." With regard to treatment of the iritis, the pupil must be kept dilated at all costs. The atropine for this purpose was best used dissolved in castor oil, or made into an ointment with yellow vaseline. Cocaine, adrenalin, and leeches should be tried, as all blanched the eye. Leeches quickly reduced the pain. After these had been applied, the patient should bathe the eye with hot boric lotion. If heat did not benefit, cold compresses could be tried. He had never seen glaucoma produced by acute iritis. Gonorrhœal scleritis was treated on similar lines to the iritis. As to the general treatment, the patient was best in bed, and the bowels should be kept well open. Recurring iritis might be due not to the gonococcus but to a streptococcus. Sometimes an autogenous streptococcal vaccine caused a rapid cure.

Gonorrhœal Affections of the Skin.

Dr. H. G. ADAMSON dealt with the subject from the standpoint of skin diseases. He said gonococcal metastatic skin eruptions must be understood to mean eruptions produced by gonococci carried to the skin by the blood-stream. He questioned, however, the existence of such eruptions; dermatologists had little, if any, practical experience of them. The statement originated in monographs written by a German—Buschke, and a Frenchman—Perrin, in 1900, and had been copied into books ever since. Audrey,

however, a careful French observer, published a case which deserved attention, in which erythematous patches following fever and joint pains showed points of suppuration, which coalesced into an abscess, and the pus from this contained gonococci in abundance. Audrey suggested that the gonococcus should be looked for in other cases of erythema multiforme. A different eruption, seen in association with gonorrhœal infection, was keratodermia blenorrhagica. This consisted of conical, horny, or translucent-looking elevations, varying in size from that of a pea to an inch across, situated chiefly on hands and feet; they might encircle the nails, and occur on the nail-beds, resulting in the nail being either raised or cast off. Sometimes a peculiar balanitis was also present. In most cases it accompanied severe gonorrhœal arthritis, with recent urethritis. Most of these cases recovered spontaneously in the course of several months by the separation and fall of the horny matter. In cases of undoubted keratodermia blenorrhagica frequently the patient was found to have also had psoriasis, or a psoriasiform eruption. The lesions of keratodermia blenorrhagica were really heaped-up masses which could be pulled off, leaving a smooth, glazed surface; the process was not really a hyperkeratosis, but a parakeratosis, like that in psoriasis. The question arose whether in keratodermia blenorrhagica one was not dealing with severe psoriasis in a patient predisposed to gonorrhœa. He quoted cases which seemed to bear out this view. Possibly psoriasis might be due to a microbe related to the gonococcus.

Gonorrhœa and the Cardiovascular System.

Dr. R. A. ROWLANDS dealt with the subject in its relation to the cardiovascular system. He said Lacassagne, in 1872, considered that cardiac complications were very rare in gonorrhœa; but the endocardium and pericardium were attacked, particularly the latter. In 1895 Thayer and Blumer proved the existence of a gonococcal septicæmia, as well as an ulcerative endocarditis, due to the gonococcus alone. In 31 per cent. of Thayer's cases there was arthritis during the course of the illness; and in a series culled from literature it was present in 68 per cent. The symptoms were those of septicæmia. There was headache, lassitude, pain in the loin, and when of sudden onset it was ushered in with a rigor. There was also irregularly remittent or intermittent fever, associated with rigors and sweating. There was in addition rapidly developing secondary anæmia, which became more marked with the longer duration. In all cases there was a very marked leucocytosis. In two-thirds of the cases there were embolic phenomena in the skin, kidney, spleen, brain, lungs, or skeletal muscles. Renal infarction was shown in ten cases by hæmaturia, and in two cases there was a partial hemiplegia. Cutaneous hæmorrhages were present in six out of 11 cases. Acute or subacute nephritis was found in most of the cases. The average duration of the disease was nine and a half weeks, and in four cases there was a terminal mixed infection. The anatomical lesions were those of vegetative or ulcerative endocarditis. Mural endocarditis was present in eight out of 20 cases, while in four cases acute pericarditis existed. Dr. Rowlands proceeded to describe a number of cases, and gave the post-mortem findings in one or two fatal cases. It was not the rule to examine the hearts of patients when they first came suffering from gonorrhœa. A previous rheumatic endocarditis did not predispose to gonococcal disease of the endocardium, for gonorrhœa was quite as liable to attack a healthy valve.

Mr. KENNETH WALKER spoke on the subject in relation to the kidney. He said the gonococcus might be present unsuspected in the epididymis until a blow, by lowering the vitality of the part, enabled the activity of the organism to be revealed. Sometimes a pathologist would fail to find it on two occasions and succeed on a third, which would seem to show that the discharge of the organisms into the general circulation took place at odd times, the flooding of the blood-stream coinciding with rises of temperature. He believed the commonest portal of entry of the organisms into the blood-stream was the prostate. Gonococcal pyæmia showed a mortality, according to French authorities, of about 30 per cent. Apparently the vascular lesion was the fatal one. Considering how common was gonococcal infection of the lower urinary tract, it was surprising how seldom the kidneys were attacked. In many cases of so-called gonococcal pyelitis the trouble was found to be due to secondary organisms. Semens, in a search of the literature, was able to find only 25 cases of undoubted gonococcal infections of the kidney, and of these only 15 were purely gonococcal. A few of them seemed to be cases of an ascending infection. Gonococcal bacteriæmia seemed to be of fairly frequent occurrence. The most fatal lesion of gonococcal pyæmia was endocarditis.

Major A. T. FROST thought it likely that the reason very few cases of metastatic complications of gonorrhœa were seen in army practice was that special attention was paid to the prostate gland; every case was thoroughly examined, and the gland massaged; and the man was not allowed to leave the hospital until, by all the known tests, the prostate was normal. He had seen very successful results of treating keratodermia blenorrhagica by means of vaccines. That seemed to show that it was a toxæmia, especially as in that disease no one had found the organism under the skin. At Rochester Row the same good results as Mr. Browning's had not been experienced by the use of low oxygen tension. The governing factor seemed to be the hydrogen-ion concentration.

Dr. T. ANWYL-DAVIES spoke of a case in which, four days after marriage, the gonococcus was grown in pure culture from the cervix, which showed no sign of inflammation. The husband had acquired gonorrhœa six weeks previously. The woman attended because of an ankle lesion, which was almost suppurating. The condition cleared up under a course of vaccines. In another case repeated tests of the urethra and cervix failed to reveal gonococci in the pus, but after treatment had continued a month there was arthritis of the elbow. This was punctured, and pure gonococcus was obtained. The case cleared up with plugging and catheterisation of the uterus, and the use of vaccines.

Mr. SYDNEY MACDONALD said he regarded the vesicle as the chief port of entry of the gonococcus to the general system. Excising the vesicle seemed to be the only means of cutting off the source of infection; he did not think it could be drained. Sometimes sufferers from joint affections were found to have had gonorrhœa ten to 25 years previously.

Messrs. Cassell and Co., Ltd., announce the forthcoming publication of the second (revised) edition of Choyce's System of Surgery.

THE University of London Press announce the forthcoming publication of the following: "Diseases of the Breast," by Mr. Willmott H. Evans; "Daydreams: a Study in Development," by Mr. G. H. Green, B.Sc.; "The Young Delinquent," the first of three volumes on the Sub-Normal School Child, by Dr. Cyril Burt; and "Talks on Psychotherapy," being the course of lectures recently delivered at King's College, University of London, by Dr. William Brown.

DONATIONS AND BEQUESTS.—The late Mr. Thomas Arnold Cash, of Highgate and Coventry, left by will, among other bequests, £2000 upon trust to enable his brother to carry on the work for the promotion of the Humane Slaughtering of Animals, £1000 to the Model Abattoir Society, £1000 to the Coventry Society for the Prevention of Cruelty to Animals, for investment for the maintenance of a whole-time inspector for Coventry and the surrounding district; £1000 to the Coventry and North Warwickshire Hospital; and £1000 to the Birmingham Cripples' Union for the establishment or support of a branch in Coventry. On the death of his wife he left £5000 to the Corporation of the City of Coventry for a public abattoir and cattle market.—By the will of the late Mr. Johann August Diederich Bornemann, of Lincoln, the testator left among bequests £1000 to the Lincoln County Hospital and £100 to the Lincoln General Dispensary.

Reviews and Notices of Books.

A TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS.

By E. POULSSON, Professor of Pharmacology in the University of Christiania. English edition, edited by W. E. DIXON, M.A., M.D., F.R.S., Reader in Pharmacology and Assessor to the Regius Professor of Physic, Cambridge. London: William Heinemann (Medical Books), Ltd. 1923. With 31 illustrations. Pp. 519. 25*s*.

IN no branch of medical study is the text-book so important as in pharmacology, for it is this subject which receives the least attention in the race to cover the fields of all the medical sciences, and the lecturer's opportunities of interesting the student in it are few. Writers of pharmacological works have perhaps the most fascinating of all material at their disposal, but the text-book worthy of pharmacology is yet to be produced. It will not be content to assume the form of a work of reference which only those already well grounded in physiology and pathology can usefully read, but it will give an account of the physiological and pathological processes occurring in the different systems, and then discuss the modification of function by pharmacological means. Such a book, carefully written, might be lengthy, but it would be of very great interest to the student, and of enormous value in inculcating a scientific method of approach towards all medical problems.

The scope of the standard text-books of pharmacology in current use in this and other countries is much more limited. The plan usually adopted is to take each drug separately and detail its several actions, to provide, as it were, a catalogue without much cohesion. Prof. Poulsson has not departed from this general pattern, but within its limits his text-book is a very creditable production. Already well known on the continent, it makes its first appearance in English under the trustworthy editorship of Dr. W. E. Dixon. It is essentially a book for the medical student, condensing its matter to a point mid-way between the larger text-book of Cushny and the smaller manual by Dixon, and in general presentation of the subject having considerable resemblance to both. The translation has been well done, for the sentences always run smoothly, and a reasonable balance has been maintained between the size of the volume and the size of the type. The classification followed is that of Schmiedeberg, and the various agents are taken one by one in an order permitting of easy steps, their pharmacological and clinical effects being described. As is to be expected, much of the experimental groundwork done by English workers does not appear, but in the general conclusions about the manner in which different drugs act there is an astonishing measure of agreement with current English points of view. Mention is made of some of the newer therapeutic agents, such as sodium, potassium, bismuth tartrate for syphilis and insulin for diabetes; it is perhaps a pity that a fuller account of these is not given, and that there is no discussion of other new treatments, such as the use of quinidine in heart disease. It is indeed surprising to find the statement that of the 20 different cinchona alkaloids "only quinine is of any great medicinal importance," for the value of the others in the treatment of malaria is now well authenticated.

These are small points, however, and on the whole Prof. Poulsson's manual contains sound orthodox teaching, clearly set out, and should be greatly appreciated by students of medicine.

ANALYTICAL MICROSCOPY.

By T. E. WALLIS, B.Sc., F.I.C., Ph.C. London: E. Arnold. 1923. Pp. 149. 6*s*.

Mr. T. E. Wallis's little handbook on Analytical Microscopy, although intended primarily for the analytical chemist and pharmacist, can be recommended for a place on the shelves of the medical microscopist. All too frequently he encounters in his preparations of pathological material foreign matters not easily recognisable as such. Unidentified structures of vegetable origin have before now figured as cancer parasites to the confusion of the weaker brethren. It is not too much to say that most of this nonsense would never have seen the light of day if the observers had even glanced through the extremely serviceable and well-chosen illustrations of this book. The essential addition of the magnification of every figure, which is a welcome and valuable feature, is too seldom carried out by other writers on the microscope. The directions for working methods are clear and crisp and many have a wider application than is modestly claimed for them in the preface.

HOW WE RESIST DISEASE.

An Introduction to Immunity. By JEAN BROADHURST, Ph.D., Assistant Professor of Biology, Teacher's College, Columbia University. London and Philadelphia: J. B. Lippincott Company. 1923. With 138 text figures and 4 coloured plates. Pp. 248. 10*s*. 6*d*.

THIS cheerful book is one of the publisher's series of nursing manuals. It is meant as a short introduction to immunity for those who already have some acquaintance with systematic bacteriology and is designed primarily for nurses and general science students whose course cannot include anything like the full instruction given to medical students. It is well and clearly written, abundantly illustrated, and remarkably cheap. In a short compass it gives a great deal of information, and any nurse or layman who was tolerably well acquainted with its contents would be able to talk about immunity with some facility. But whether they would know much about it is another matter. The book is quite a brilliant attempt to make the royal road. It may seem to have succeeded. But, of course, it really fails, and to pretend to any university student that he can know about immunity without sweat and tears is to cheat him of his education. As to nurses, the days are no doubt gone when Florence Nightingale said, "the strongest to the wash-tub," and if they really know all there is to be known about bed-comfort and all the arts of sympathetic kindness which have saved more lives than antisera, they will no doubt be the better for reading Dr. Broadhurst as an optional graduate course reserved for those who have learned their business. It is a book for some sisters, not for all probationers. The senior medical student who knows his Muir and Ritchie might read it with advantage; many of the points are put very well and some of the diagrams are excellent. And it can be heartily commended to practitioners who have got out of touch with modern practical serology. But as a student's manual it will not do; one might as well propose to substitute Sir Oliver Lodge's "Easy Mathematics" for Pendlebury, or Hall and Knight.

ANORMALE KINDER.

By Dr. L. SCHOLZ, Nervenarzt in Bremen. Third revised edition by Prof. Dr. ADALBERT GREGOR, Direktor der Fürsorge-erziehungsanstalt Flehingen in Baden. Berlin: S. Karger. 1922. Pp. 312. M.30.

WE reviewed the first edition of this book in 1912. Dr. Scholz fell in the war and another hand has revised and enlarged the monograph, notably in the direction of amplifying the sections on after-care and social service. According to the author, of every 200 German children three are feeble-minded, which gives a total of about 180,000 for the 12 millions of children of school age. Figures quoted from Switzerland give a percentage of 1·6, which is approximately the same. The handling of such numbers, medically and educationally, is a task calling for a body of helpers in numbers far beyond those already enlisted, and for adequate assistance from the State. A full descrip-

tion is furnished of the methods in vogue in institutions, families and special schools. As far as we are aware, Dr. Scholz's work has not appeared in English, yet it contains much which should appeal to a wider public.

SPECIFIC REFLEXES.

Untersuchungen über die Eigenreflexe (Sehnenreflexe) menschlicher Muskeln. By PAUL HOFFMANN, Privatdocent für Physiologie in Wurzburg. Berlin: Julius Springer. 1922. With 38 illustrations. Pp. 106. 6*s*.

THIS little book contains in small compass much physiological information the clinical bearing of which must be of particular interest to the neurologist, who deals with reflexes daily. Dr. Hoffmann considers, justly, that the term tendon-reflex is misleading, and he prefers to substitute for it the expression "specific reflex," meaning thereby that each muscle of the body (this can obviously be demonstrated more easily in some than in others) has its own reflex—i.e., makes its response to the adequate stimulus. It is unnecessary for the clinician to load text-books with tables of reflexes; he need only select one or two as of practical value. All skeletal muscles have this property in common, that if their extent is abruptly lengthened by any mechanical device they respond, provided the tonus is sufficient, by a contraction, which is not a movement, but a necessary, partial, function of all voluntary movements. Its isolated appearance, as in reflex-testing, is meaningless, or, rather objectless. The specific nature of the reaction is fully investigated by Dr. Hoffmann mainly with the help of the newer methods such as the Einthoven galvanometer, and the phenomena of facilitation and inhibition are minutely described.

THE EMOTIONS.

By CARL GEORG LANGE (1834–1900), University of Copenhagen, and WILLIAM JAMES (1842–1910), Harvard University. Psychology Classics: a Series of Reprints and Translations. Edited by KNIGHT DUNLAP, Johns Hopkins University. Vol. I. Baltimore: Williams and Wilkins Company. 1922. Pp. 135. $4.

Dr. Knight Dunlap has undertaken a commendable task in editing a series of reprints and new translations of psychological classics, and the first volume will undoubtedly lay the student of psychology, philosophy, or physiology under a debt of obligation to him. It contains (1) a new version from the German text of Prof. Carl Lange's book "Ueber Gemuthsbewegungen" (1885), and (2) a reprint of Prof. James's article in *Mind* (1884), entitled "What is an Emotion?" together with the chapter on the emotions from his "Principles of Psychology." In the history of the subject the James–Lange theory has exercised a profound influence on contemporary and later workers, and while it may be that the hypothesis stands in need of revision, or of "softening," as the editor says, at any rate it should be fully understood by those who are inclined to discard it. All who are interested should make themselves familiar with the originals as now first presented in convenient and consecutive fashion.

DER BALKEN.

Eine Anatomische, Physiopathologische, und Klinische Studie. By Dr. G. MINGAZZINI, Professor of Nervous Disease in the Royal University of Rome. Berlin: Julius Springer. 1922. With 84 illustrations. Pp. 212.

Prof. Mingazzini's monograph on the corpus callosum provides a remarkably complete account, anatomical, pathological, and clinical, of the largest commissure in the brain, and embodies much valuable information gleaned from various papers scattered through the literature and not readily accessible to the student. Within recent years attention has been directed to the corpus callosum mainly from the point of view of transcortical disorders of function, such as apraxia and agnosia, and approximate localisation within it has been rendered possible by the labours of many neuropathologists. The experimentalist, also, has worked at its physiology. The monograph under review should at once find its place in the library of every neurologist, since no text-book deals with its subject-matter so adequately, nor has any previous similar contribution been so detailed or so informative.

A COMPENDIUM OF TUBERCULOSIS THERAPY.

Handbuch der gesamten Tuberkulose-Therapie. Edited by Prof. Dr. med. ERNST LOEWENSTEIN. Vienna: Urban and Schwarzenberg. 1923. In two volumes. With 32 illustrations, some coloured. Pp. 1044.

THE first part of this bulky handbook is published in two volumes, and if the second part is as bulky as the first, it would be more accurate to describe this work as a library than as a handbook. In his foreword, printed at the end of these volumes, Prof. Loewenstein states that this work is the sequel to post-graduate courses given by himself—courses which whetted the appetite of his pupils for a systematic course of published lectures by well-known authorities. The work is addressed to general practitioners, whom Prof. Loewenstein would like to see converted wholesale into tuberculosis specialists. Only thus can the campaign against tuberculosis become effective; hospitals and sanatoriums are but stations on the consumptive's long journey, and he will fare well or ill according as the long distances between these rare stations are patrolled efficiently by the general practitioner. It is customary to speak of him as the "busy" general practitioner. The many to whom this adjective applies may be more than a little alarmed by these 1044 pages, with the promise of more to come. Fortunately the subject is well classified, and thus the first qualification of a useful work of reference is guaranteed.

The editor of a work like this, to which many specialists contribute, should be a good team-driver, with a discriminating sense of proportion and balance. In this connexion it is a pity that one of Prof. Loewenstein's team of 20 has got out of hand. Nearly half of this first volume (469 pages, to be exact) is devoted to diet in tuberculosis, and it is doubtful if even the general practitioner who is not busy will find time to digest this monograph. The other contributors have kept their contributions within more modest limits, and the value of their work has certainly not suffered from their parsimony of words. Naturally many of the authors hail from Vienna, but the general editor has given a cosmopolitan flavour to his work by the inclusion of contributors from Barcelona, Philadelphia, Berlin, and Göttingen. Though the work is mainly concerned with treatment, there is plenty of pathology and even pure physics, and the chapter on the physical, chemical, and biological foundations of treatment by radiation is highly technical. There is a dry, but instructive, chapter on the statistics of tuberculosis by Prof. L. Teleky, of Düsseldorf, and a long and interesting chapter is contributed by Prof. G. Liebermeister on tuberculosis of the blood-vessels. A chapter with the intriguing title, "Statistics of Sanatorium Results," must bring disappointment to the statistician, for analysis shows that the statistical support of this form of treatment is very unreliable. The author concludes that a better estimate of the value of this treatment can be formed by the clinical study, by an expert, of a large number of cases. Another chapter is devoted to tuberculosis in relation to pregnancy, and the author, Dr. Frischbier, is in favour of inducing abortion when pulmonary disease is progressive. But he is not reckless in this direction, and he gives the very useful advice that the pregnant patient should be kept under observation

for a month in a sanatorium before the fate of the fœtus is settled. In favour of inducing abortion he points out that the infant mortality in this class of case is about 70 per cent., and that inducing abortion has a favourable effect on the patient in about the same percentage. The chapter on respiratory exercises in pulmonary tuberculosis will give pause to readers who regard such exercises as the most effective method of inducing auto-inoculation.

In spite of the intrinsic merit of many of the chapters it is an open question whether such a large work, addressed to the general practitioner, does not defeat its own object.

ALFRED YARROW: HIS LIFE AND WORK.

By ELEANOR C. BARNES (Lady Yarrow). London: Edward Arnold and Co. 1923. Pp. 328. 10*s.* 6*d.*

ONE of the seven wise men of Greece—namely, Solon—was of opinion that no man should be called happy while yet alive, for life is full of uncertainties. If, however, any man can be called happy while alive it is the subject of this memoir, for it is the story of a man who from small beginnings has built up a great business, has done nothing but good work, has won the affection of all who worked with him in whatever capacity, has rendered incalculable services to his country, and has accumulated a large fortune. This last item he would consider as the least of his benefits except in so far as it has enabled him to benefit his fellows in many ways, and in two particularly—namely, the Yarrow Convalescent Home for Children at Broadstairs and the gift of £25,000 towards the new out-patient room at the London Hospital. Sir Alfred Yarrow has reached his eighty-first year, and it must be with great content that he looks back over his past years. We congratulate Lady Yarrow upon her book, so simply and clearly written, giving a life-like picture of a man who was never satisfied in turning out any work but the best. How good the best was may be gathered from the records of the Yarrow destroyers during the war and also of the various classes of boats employed on the Tigris. As regards the latter operations Lady Yarrow records one delightful episode. The boats had been shipped in pieces and had to be assembled at Abadan. Mr. William Grant was in charge of the work and had to obtain workmen from all parts of the country, and consequently of varying nationalities, races, and creeds. He found that if a foreman wanted a tool, such as a hammer, he had to send two men for it, for if only one were sent "and if he were seized with a sudden desire to pray (falling on the ground for that purpose, in which devout occupation he must not be disturbed) the hammer might not appear for a considerable length of time." The British plumber is not, we imagine, hindered in getting tools which he has forgotten by "a sudden desire to pray," but it is a mark of the brotherhood of man that the same characteristics appear in the East as in the West. In relation to this matter, we may refer readers to Chapter XXX., which contains Yarrow's views on industrial problems, and is full of sound commonsense.

And here we must leave this fascinating book, but we cannot do so without wishing both its subject and its author many more years of useful happy life. Everyone will recollect the story of the Greek voter who voted against another citizen because he was tired of hearing him called "the Just." So as to spare Sir Alfred Yarrow from this fate we must recall one blot in his life's work, and that is, that so far as we can gather, he was the first to introduce steam launches on the upper Thames—a subject upon which the language of Eton and Oxford is comparable to that of the English army in Flanders in the eighteenth century. We will only add that this book ought to be in the hands of every boy, not only those who are going to be engineers, for it is a handbook to patience, perseverance, honest output, and how to spend money when it has been made.

JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XX. April–June.—Mr. T. B. Layton contributes a paper on the Treatment of Acute Otitis Media in Children, in which he points out that this treatment is one which should be carried out in nearly every case by the general practitioner. The patient should be kept at rest in bed, while local treatment consists in the incision of the drumhead at the right moment. Mr. Layton maintains that it should be the aim of every practitioner never to allow a drumhead to rupture spontaneously, to look upon an inflamed ear, which under his observation has gone on untouched to the stage of discharge, as something of a disgrace to himself, just as he would consider to be so a case of acute appendicitis which in similar circumstances had gone on to acute peritonitis. As it is important that nothing should prevent a good view of the drumhead being obtained, hot fomentations, which cause the superficial epithelium to swell up and entangle any bits of cerumen, should never be used, but pain should be relieved by application of dry heat to the ear and side of the head by a hot-water bottle and pad of wool, and by the installation of antiseptic drops. The drumhead should be incised as soon as it is seen to be bulged, the incision being made deliberately under an anæsthetic. In the subsequent treatment of the case the practitioner must watch carefully for signs of mastoiditis.—Dr. F. Parkes Weber contributes a paper entitled The Nature of Banti's Disease: Its Differentiation from Other Types of Splenomegaly and its Relation to "Idiopathic" Non-Alcoholic Progressive Hepatic Cirrhosis in Children and Young Persons.—In a paper on the Classification of Blood Diseases in Childhood, Dr. Gordon Ward has drawn up a new classification founded on a mixed anatomical and pathological basis.—Dr. R. Miller reports a case of cœliac disease showing symptoms of megacolon, with autopsy, his object being, first, to establish that cœliac disease may give rise to distension of the colon sufficient to cause visible colonic peristalsis, and, secondly, to confirm his view that cœliac disease is a digestive fault, and not an organic disease.—In a paper entitled On Localised Peritonitis Due to Intestinal Perforation in Paratyphoid Fever: Report of a Case, Mr. A. E. Mortimer Woolf states that perforation in paratyphoid fever is uncommon in civil practice, though during the war hæmorrhage and perforation were almost as frequent in paratyphoid as in typhoid. When perforation occurs in typhoid or paratyphoid, general peritonitis nearly always takes place. Although there are a few instances on record of localised peritoneal abscess in typhoid fever, the writer has been unable to find any previous examples occurring in either paratyphoid A or B. The case here reported was in a boy, aged 15, who developed acute abdominal pain on the fifteenth day of an attack of paratyphoid B. At operation a perforation was found in the lower end of the ileum walled off from the general peritoneal cavity by the great omentum. The perforation was closed, and recovery was uneventful.—In a paper on the Meningeal Form of Typhus in Children, MM. Gratzosky, Stroë, and Coccias, of Bucharest, remark that typhus in children occasionally assumes a meningeal form, of which they report three examples in patients aged 2, 3, and 7 years respectively. The meningeal symptoms consisted in strabismus, inequality of the pupils, nuchal rigidity, exaggerated reflexes, and positive Kernig and Brudzinski signs. On lumbar puncture a clear cerebro-spinal fluid was obtained under hypertension, containing abundant lymphocytes with a few red cells and polymorphonuclear leucocytes. One case was fatal, and the autopsy showed meningeal infiltration and a large quantity of cerebro-spinal fluid slightly blood-stained in character. The other two children recovered in nine and ten days respectively.—The abstracts from current literature are devoted to alimentary diseases and oto-rhino-laryngology.

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THE LANCET.

LONDON: SATURDAY, JULY 7, 1923.

HOUSE INFECTION.

MUCH interest has been excited by the publication of Mr. Justice MCCARDIE'S reserved judgment in the case of COLLINS *v.* HOPKINS, the details of which are summarised on p. 34. His Lordship ruled that it was the obvious duty of a person, in whose house there has been recent infectious disease, to disinfect it in the most complete manner open to him, before letting it furnished. In his reading of the law a warranty is implied in any contract on the lessor's part that the premises are reasonably fit for habitation, including freedom from the risk of infectious disease, irrespective of whether the subject was mentioned between him and his prospective tenant or not. The law does not lay upon the lessor the obligation to consider the fads of nervous persons unreasonably afraid of infection where no danger exists. Nevertheless, if the lessor wishes to avoid trouble, he will be frank in mentioning any disease likely to cause alarm, and in giving full information as to the steps he has taken to remove any source of infection. We do not propose to comment in detail upon the many divergences in statement and in opinion which arose in the hearing of this very important case. Mr. Justice MCCARDIE accepted as a fact that the house was left in a dirty condition, and his judgment was definitely based upon this premiss. Of course, if the house was dirty all the rest follows, for domestic dirt affords a nidus for the development of bacteria of all kinds, and no one should hand on the tenancy of dirty dwelling-rooms. We have a feeling that more might have been made by the defence of the preparations actually made for the tenant's incoming. There were no hangings but casement curtains, and these were washed; a solution of lysol was used for washing the floors; bed-clothes were sent to the laundry as well as the loose covers of furniture, and new covers were made for the cushions. But over and above this, there was the assurance on the part of the medical attendants that the case was not one with pronounced symptoms of advanced disease and that, although tubercle bacilli were present in the expectoration, the patient was sanatorium-trained, and meticulously careful in observing the instructions he received to prevent the spread of infection. The omission of notification to the local medical officer of health was indeed an unfortunate oversight, but the omission to fumigate the premises, we understand, was deliberate, in view of the care taken by the patient, and in view of the fact that he spent his time on the balcony and not in the rooms.

But although in this particular instance, and for the reasons stated, the case went against the defendant, that part of His Lordship's judgment which merits the closest attention is his statement that if the patient were properly trained as to his habits, if he carried out his medical instructions, and if full regard was paid to ventilation, sunlight, cleanliness, removal of dust and dirt, and the like, then the risk of infection might not be serious even to those who resided with him. Still less was the risk, he went on, to those who entered the house after the patient had left and if proper methods of disinfection had been adopted. We are grateful to the learned judge for thus setting out clearly the essential factors in the conveyance of infectious disease from one person to another. Only in regard to terminal disinfection would the modern hygienist place the emphasis differently. At a recent congress of the Royal Sanitary Institute, Dr. T. W. NAYLOR BARLOW, the President-elect of the Society of Medical Officers of Health, traversed the whole notion of the potency of present methods; he went so far as to say that all house disinfection might safely be scrapped. Without denying the possibility of transmitting disease by means of inanimate objects, he regarded books, the walls of rooms, and such like, as of no account as factors in the spread of disease, logically adding that the so-called disinfection of rooms by gas is futile and unscientific. Conviction is indeed growing, not in this country alone, that the living breathing human being is the only real danger. We recently quoted the decree of the Prussian Ministry of Health, the essence of which is to organise bedside disinfection during the whole course of a patient's illness in such a way as to make a final disinfection of secondary importance or, indeed, altogether superfluous. It is perpetuation of the chronic carrier to which professional and public attention alike should be directed, and, while gaseous disinfection by formalin and sulphur fumigations may be done, this sanitary ritual should not lead to neglect of the weightier matters of the law of personal hygiene, soap and elbow-grease, sunshine and ventilation.

THE SMALL-POX MENACE.

THE Minister of Health, in his opening statement in Committee on Supply in the House of Commons on June 28th, alluded to the present situation in regard to small-pox as distinctly serious, and regarded it as his duty to speak plainly. Whereas 20 years ago 75 per cent. of young children were vaccinated, to-day the percentage was only 38, and the country was faced with the possibility of the outbreak of a great epidemic which would be dangerous to health and even perhaps to life, besides inflicting injury upon the commerce of the country. The Ministry, he said, was watching the situation closely, and he emphasised as strongly as he could that the one sure protection against small-pox was vaccination, and that those who refused, or incited others to refuse it, were taking upon themselves a very grave responsibility. Up to June 16th 955 cases of small-pox had been brought to his notice, a number nearly as great as the total notifications of last year. Among those who had had experience of the actual disease, there had, he thought, been no doubt as to the nature of the recent cases. Although mild, the fact must not be lost sight of that the disease, which began in a mild form, might presently develop into something very much more serious. Mr. NEVILLE CHAMBERLAIN'S words may be read in our Parliamentary Intelligence column.

The situation in Gloucester is reminiscent of the early days of public health administration, before there was a general recognition on the part of the community that health was a first charge on their time and interest, a basis on which alone the fabric of civilised life could be firmly built. Something has occurred in Gloucester to interrupt the orderly course of notification, isolation, and protection of contacts which has become the token of enlightened municipal action throughout most civilised countries. Expression has been given with more or less emphasis to three

different shades of thought. Some of those prominent in civic life have held that, whatever the nature of the infectious exanthem prevalent in the town, nothing should be done about it in a public way, in order not to spoil the trading facilities and other amenities of the place—a natural but not very long-sighted form of local patriotism. Another section has regarded the diagnosis of chicken-pox almost in the nature of an article of faith not amenable to disproof by ordinary scientific criteria; for a considerable number of cases notified as chicken-pox, actually 31 in the week ending June 23rd, have been rediagnosed as small-pox by medical officers of the Ministry of Health and of the Metropolitan Asylums Board, whose knowledge as experts would receive immediate acceptance in a calm atmosphere. Difficulty seems to have arisen in regard to the distinction between chicken-pox and small-pox, largely owing to insufficient stress being laid on the distribution and simultaneous appearance of the rash and too much importance on the presence of constitutional symptoms; for, as we have already noted, and are glad still to be able to note, there has, so far, not been a single fatal case this year among all the notified cases of small-pox. This admirable mildness of the disease it is which has encouraged still another local view—namely, that the disease is small-pox, but that it does not matter, the mildness being such as to render the outbreak unimportant from a public health point of view, making it therefore unnecessary to impose limitations on personal liberty in connexion with it. We are glad to think that there is no body of medical opinion included in the first and third groups which we have mentioned, and that the doubt in regard to the diagnosis is honest doubt, bred of the lack of experience in seeing actual cases of small-pox, which is the heritage of the last two generations of medical men. Dr. W. McC. WANKLYN spoke very appropriately to Guy's medical students last week on this alleged inability of the medical profession to diagnose small-pox, and he laid before them the results of the consultative system of small-pox diagnosis in London and some solid proof of what this system of diagnosis has effected. It is something for which humanity may be thankful that one of the worst of infectious plagues betrays itself early by a characteristic skin eruption which it is not—to use the phrasing of the National Health Insurance Act—beyond the ability of the practitioner of ordinary competence and skill to discover.

THE NATIONAL PHYSICAL LABORATORY.

AT the invitation of the President of the Royal Society a large company gathered at Teddington last week to view the various departments of the National Physical Laboratory. The opportunity of seeing the research and testing departments in full working order and of meeting experts in every branch of physical science, which the occasion afforded, was widely appreciated, and the spacious department of aero-dynamics, with its huge wind tunnels, formed a pleasant setting for the reception.

Among the many branches of science flourishing at the laboratory there is, perhaps, none so interesting from the medical point of view as that of radiology. The recommendations of the X Ray and Radium Protection Committee for the better protection and general improvement of the working conditions of X ray operators have resulted in a large number of X ray materials being submitted for test to this department. A report of the work has been made by Dr. G. W. C. KAYE and Dr. E. A. OWEN. It contains interesting data concerning the protection afforded by such substances as sheet lead, lead-impregnated rubber, lead glass, and barium-sulphate plasters. The lead equivalent—that is, the thickness of lead equivalent in absorption power to unit thickness of the material—has been determined, and the figures given in the report will be of great convenience to radiologists. Of the many interesting comparisons given the following may be cited. The lead equivalent of a 12-in. solid concrete floor is about 3 mm. The masses of a steel and a lead plate which afford equal protection against X rays excited by 100,000 volts are in the ratio of 4 to 1. Different makes of lead rubber are found to differ by as much as 100 per cent. in protective value. Among the substances used for tube boxes sheet lead appears to be the lightest protective material to use, lead rubber being anything from 5 to 25 per cent. heavier. The open lead glass bowl, commonly used with X ray tubes, is criticised by the authors, who state: "In our experience, where this type of shield is alone employed, it is often possible to take a radiograph in any part of a room where a tube is working." Concurrently with this research on X ray protection the department has carried out investigations on the intensity of X rays emitted by Coolidge and gas tubes when operated by various types of high-tension generator. The work has shown that the intensity of the radiation emitted by an X ray tube is not in all cases proportional to the mean current passing through the tube, when the applied voltage is kept constant. Further, the investigators are led to state that: "Considerations of voltage and current wave-forms point to the conclusion that for a given voltage, and when the maximum current is in phase with the maximum voltage, the intensity of radiation emitted by an X ray tube, whether of the gas or of the hot cathode type, is roughly proportional to the maximum or peak current passing through the tube. This is true both for coil and transformer discharges." The radiology department is fully alive to the increasing application of higher voltages in medicine and in the study of metallic structures, as is shown by recent acquisition of a 200 kilo volt machine. Doubtless many of the problems involved in the practice of deep therapy will receive due attention at the hands of the director and his assistants. The department of sound is growing, and among the exhibits many were of medical interest—in particular an apparatus for the production of sounds of constant intensity and telephonic methods for the measurement of sound intensity. Certain workers in this field claim that variations of intensity of one million fold can be detected by the ear, and further by the use of these methods it can be demonstrated that the ear is incapable of detecting a 10 per cent. change in the intensity of sound. The research in this direction contemplated by the department will be awaited with interest, and might eventually be applicable to stethoscopy. In the multitude of routine tests which are carried out in the various sections there is evidence in all directions of the ingenuity and thought expended on the minutest details of even the simplest physical determinations. For example, in tests made upon the clinical thermometer, despite the fact that less than 2 per cent. of the number received are rejected, each thermometer is tested at four different

temperatures between 95° and 110° F., its readings at these points being compared with a standard thermometer. The comparison is carried out in an electrically heated water thermostat, in which the water is kept in very rapid circulation. After the comparison has been made for any one temperature, the water is raised in temperature a further two-tenths of a degree, and readings of the thermometers are again taken to ensure that they are responsive to slight temperature changes. At the present time about 1200 thermometers are tested daily in this manner.

Many fascinating exhibits were displayed by the optics division. The colour effects obtained with the Nutting colorimeter were as pleasing as the methods for measuring the radii of curvature of microscope objectives were ingenious. The polarimetric and saccharimetric equipment, together with the apparatus for lens testing, was particularly attractive. Though in three fascinating hours only a small part of the activities of the laboratory could be witnessed, it was possible to estimate the magnitude of the work efficiently dealt with. In the National Physical Laboratory the nation has an asset of incalculable value.

A SPA FOR THE T.B.M.

HARROGATE is making a push to become the place of healthy resort for the tired business man, that ill-defined but frequent product of our present-day city life. With its pleasant subalpine situation and its abundant facilities for the application of the healing virtues of waters and sunshine and fresh air, it is not unreasonable to suppose that the early stages of this real and destructive fatigue may be treated with success. Common experience, indeed, points in this direction, and medicine is primarily concerned with selecting the appropriate cases and eliminating those in which there is already the foundation of serious organic disease. For this Harrogate is well equipped, for it has clinical facilities which can easily be turned into team-work and pathological facilities to detect the early stages of organic malady during a period of time devoted to rest and recreation. Nor does Harrogate cater only for those of abundant means, for, through the Royal Bath Hospital, which has a considerable endowment and is largely supported by the more wealthy visitors, pass every year 2000 or more patients from all parts of England, and arrangements have been made by the local medical profession for the complete examination of cases of moderate means at an inclusive fee. A new Pullman car service has been inaugurated bringing the bracing northern spa within easy reach of comfortable travel from London and, contrary to foreign practice, two-thirds of the train is put at the disposal of modest purses.

INDEX TO "THE LANCET," VOL. I., 1923.

THE Index and Title-page to Vol. I., 1923, which was completed with the issue of June 30th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

SMALL-POX IN ENGLAND AND WALES.—During the week ending June 23rd 141 cases of small-pox were notified in England and Wales, the distribution being as follows: Derbyshire 12 (Alfreton 1, Belper 1, Heanor 4, Long Eaton 5, Clown R.D. 1); Durham 1 (Stockton-on-Tees); Gloucestershire 90 (Gloucester 79, including 31 cases notified as chicken-pox but rediagnosed as small-pox, Cheltenham 1, Stroud 2, Westbury-on-Severn 1, East Dean R.D. 4, Gloucester R.D. 3); Herefordshire 1 (Hereford); Nottinghamshire 21 (Kirkby-in-Ashfield 6, Warsop 15); Warwickshire 1 (Birmingham); Worcestershire 1 (Martley R.D.); Yorks North Riding 1 (Middlesbrough); Yorks West Riding 12 (Bentley-with-Arksay 2, Doncaster R.D. 10); Monmouthshire 1 (Risca).

Annotations.

"Ne quid nimis."

THE POSTPONED BIRTHDAY HONOURS.

LAST week-end was published the list of honours, conferred on the occasion of the King's birthday, announcement of which was postponed on account of the change in Prime Minister. A baronetcy has been conferred upon Sir Anthony Bowlby, K.C.B., K.C.M.G., K.C.V.O., President of the Royal College of Surgeons of England, and knighthoods upon Dr. George Francis Blacker, C.B.E., Dean of University College Hospital Medical School, and on Lieut.-Colonel Ewen John Maclean, chairman of the Consultative Council of the Welsh Board of Health. A Commandership of the Order of the British Empire has been conferred upon Lieut.-Colonel John Southey Bostock, R.A.M.C., Director of Medical Services of the Ministry of Pensions. To these gentlemen we offer hearty congratulations in the name of the medical profession. Other names in the list familiar to medicine are those of Sir William Plender, who has done excellent work in connexion with the National Health Insurance Act and who becomes a baronet, Mr. Walter Schroder, coroner for Central London, who becomes a Knight Commander of the British Empire, the Rev. Canon Frederick Charles Davies, vice-chairman of the Consultative Council of National Health Insurance, Mr. Walter Davies, chairman of the Manchester Hospitals Voluntary Committee, and Mr. Ernest Tom Neathercoat, President of the Pharmaceutical Society (for work in connexion with the Dangerous Drug Regulations), who become Commanders of the Order of the British Empire.

TUBERCULOSIS IN CHILDHOOD.

IN the July number of *Tubercle* there are several original articles and reviews dealing with tuberculosis in childhood. It has been said that if the problem of tuberculosis in childhood were solved, the problem of tuberculosis in the adult would practically cease to exist. In a paper by Dr. C. D. S. Agassiz and Dr. S. Roodhouse Gloyne an account is given of investigations undertaken with a view to determining whether or not the tubercle bacillus can be detected in the blood-stream in children at or about the time of the primary infection. In the cases chosen for this investigation the signs varied from those of slight involvement of the lymphatic glands to those of disease of the peritoneum or lungs. In the control cases the diagnosis of pulmonary tuberculosis was supported by extensive physical signs and the finding of tubercle bacilli in the sputum. From 1·5 to 10 c.cm. of blood were drawn from a vein, were mixed with a 1·5 per cent. solution of sodium citrate, and were in each case injected into two guinea-pigs. In no case did they develop tuberculosis, although blood obtained from these patients was drawn off both during apyrexial and pyrexial periods. It would thus appear that infection of the blood-stream by tubercle bacilli in children suffering from tuberculosis is not easily demonstrable by the method described, and the following alternative conclusions are drawn: That (*a*) the number of bacilli circulating in the blood is too small to be thus demonstrated, (*b*) they are discharged into the blood-stream only at intervals, or (*c*) extension of the disease takes place by some other route, such as the lymphatic system. A paper by Prof. P. Bull, of Christiania, contains a tale of an instructive mistake. A boy, aged 3, was supposed to be suffering from malignant disease of one testicle and metastases in the abdominal cavity. Laparotomy revealed no free peritoneal cavity; wherever he explored, Prof. Bull only found a curious greyish substance which seemed to have permeated the peritoneum, omentum, and neighbouring structures. Still thinking that the case was one of malignant disease, and therefore practically hopeless, he thrust

radium tubes, without lead filters, into this greyish mass in various directions, the total dose of radium being 11 cgm. A week later the signs and symptoms of severe abdominal disease had vanished, and the child lived to die several months later of acute middle-ear disease. The necropsy showed extensive healing of tuberculosis in the peritoneal cavity and elsewhere. Among the reviews of original papers on tuberculosis in childhood there is one in which the value of a single Pirquet test is shown to be very untrustworthy. Of 800 children thus tested only 537 gave a positive reaction to the first Pirquet test with old tuberculin. Of the remaining 263 cases as many as 170, or 64·6 per cent., gave a positive tuberculin reaction either to a second Pirquet test or to the intracutaneous injection of old tuberculin in varying strengths.

FAITH AND PRACTICE.

IT is always rather difficult for a nonconformist of any complexion to understand the principles of the true faith, and when the *Homœopathic World* (No. 690, June, 1923) says that THE LANCET has "acknowledged the truth of the homœopathic principle," it is interesting to wonder to which or what principle assent has been given. Is it the original doctrine that *similia similibus curantur*? Or is it the more modern development which claims that drugs are effective in dilutions which would not contain a single molecule of the original active agent? Or is it the attribution of natures and qualities and emotions to plants which can be apprehended and used only by those in spiritual communion with the sources of drugs? It would be as difficult for the orthodox medical practitioner to draw up his creed of allopathy. Upon some of the clauses in both cases there would, we imagine, be insoluble differences of belief. But does this greatly matter when there is so much that is plain and fundamental from which no one will dissent? *In certis unitas, in dubiis libertas, in omnibus charitas.* No cult of medical men could have a better motto. And if it is followed in practice—and the more unconsciously the better—there is not much need to embark on the dangerous sea of putting down on paper what each group believes. They can all meet on the common ground of sincere humane and skilful work.

THE REGISTRATION OF DISEASE.

HOSPITAL statistics run largely to waste. This is, we think, the main lesson of a very interesting discussion on the Registration of Disease, opened by Dr. Reginald Dudfield at a meeting of the Royal Statistical Society last March,[1] and now reprinted. In his opening remarks at this discussion Dr. Dudfield pleaded for a utilisation of the records of sickness which accumulate in our general hospitals and other institutions for the treatment of disease. "It is a common experience," he said, "to read reports by different workers, dealing apparently with similar material, diametrically contradictory to each other." What is needed is the bringing together of the data derivable from all institutions, the collation and analysis of such data by a central body of statisticians who are not only statisticians but medical men of ripe judgment, well versed in the problems of public health. Other medical statisticians, Dr. T. H. C. Stevenson and Dr. Major Greenwood, and such eminent experts in public health matters as Sir William Hamer and Dr. John McVail, were in sympathy with Dr. Dudfield's general contentions. Dr. Stevenson pointed out that even without drastic reform of the present system, some improvements might be effected. He instanced the emendation of the law required to secure knowledge of the sex and age distribution of cases of infectious disease, and suggested that a very good indication of the social class of each decedent would be afforded by a mere record of the number of rooms in the tenement occupied by the family. Dr. Greenwood dwelt upon the importance of a proper exploitation of hospital statistics, supplemented by a system of following up cases, in the study of the prognosis after operative or other treatment of malignant disease. Dr. Hamer advised Dr. Dudfield "in addition to trying to get more out of his Poor-law and health statistics" to try "to persuade the hospital authorities to introduce the study of disease as a mass phenomenon to their medical students." The medical profession as a whole will, we think, be in sympathy with Dr. Dudfield's ideas. Without doubt the economic and administrative difficulties of any centralisation of records are great, but the fact remains—and it is worth repeating and italicising—that, to a large extent, hospital experience *as a statistical datum* runs to waste. Of course, its value as such is only secondary, the highest use for hospital experience is its incorporation in the minds and practice of each generation of physicians and surgeons. But there is no opposition between these purposes. Sir William Osler could not be accused of having underrated the practical element in medical education, but, in his text-book, he employed the statistical method more fully and frequently than any other physician of his time. Dr. Dudfield's proposals would have had the full approval of that great physician.

[1] Jour. Roy. Stat. Soc., 1923, lxxxvi., 129.

A MILK-BORNE EPIDEMIC OF GASTRO-ENTERITIS.

A RECENT epidemic of milk-borne gastro-enteritis in Denmark has been the subject of instructive investigations by Dr. A. Christensen and Veterinary Surgeon P. Grinsted,[1] who claim that for the first time (with the possible exception of Dr. K. F. Meyer's case reported in the *Journal of Infectious Diseases* for 1916) proof positive has been found of a typical bovine paracoli infection being conveyed by cow's milk to man. The epidemic in question broke out on Oct. 11th, 1922, in a large hospital. Thirty-nine of the staff and 56 of the patients were seized with general malaise, fever, abdominal pain, nausea, headache, vomiting, and diarrhœa. In two cases there was an outbreak of herpes on the upper lip, and in one case there was partial loss of consciousness for 24 hours. None of the patients died, and no new cases occurred after the first outbreak. The incubation period was evidently very short, as was also the period during which the disease was contracted; for among the patients there was one who had been admitted to hospital for some other disease only the day before the outbreak occurred, and none of the persons admitted to hospital on the morning of the outbreak developed gastro-enteritis. All the patients had taken unboiled milk, and an inspection of the sources of the milk-supply led to the discovery that at a small farm one of the 13 cows in milk had fallen ill on Oct. 9th. Next day it had been very ill, with offensive diarrhœa and a temperature of 40° C. The cow died in the night of the 11th and 12th, but the milk yielded on the 9th had not been thrown away, although the cow's udder was œdematous. The necropsy on the cow showed definite signs of septicæmia, the spleen being gigantic and the liver and mucous lining of the small intestine showing acute inflammatory changes. Sections of the udder showed early mastitis which was evidently secondary to the enteritis and septicæmia. Numerous Gram-negative short bacilli, identified as bovine paracoli bacilli, were found in the spleen and secretion from the udder. A pure culture of the same bacilli was obtained from the fæces of two of the patients, and agglutination tests of the sera of 31 patients on the ninth to the twelfth day of the disease left little doubt as to the relation of the germs found in the cow to the epidemic in man. There is a disease in cattle known in Denmark as "paracoli bacillosis," from which calves often suffer, but to which full-grown cattle are usually immune. It may be that this comparative immunity of full-grown cattle to paracoli bacilli explains the rarity with which human

[1] Hospitalstidende, April 11th and 18th, 1923.

beings seem to contract this form of gastro-enteritis. But it is conceivable that this rarity is more apparent than real, and that were agglutination tests to be carried out more frequently in epidemics of this kind, bovine paracoli bacilli would often be convicted. The moral of this episode is not far to seek. Were farmers to be systematically taught the risks of keeping the milk of sick cattle, they would not be tempted to follow the penny-wise-pound-foolish policy of mixing infected with pure milk.

A POST-GRADUATE COURSE ON ALPINE THERAPEUTICS.

WE have received the announcement of a course of vacation lectures on Tuberculosis in the Alpine Climate to be held at the Research Institute in Davos from the 19th to 26th of the coming August. This Institute, in regard to which we were able to give some preliminary details last autumn, has now materialised as far as its physiological section is concerned, under the management of Prof. A. Loewy, who was for long one of a group of collaborators with Prof. Zuntz in respiratory problems. The bacteriological section of the Institute is also ready for occupation, and it is hoped to place this in the charge of an expert, when the expected help from the Swiss Confederation comes in after the Tuberculosis Bill has become law. At present the joint sponsors of the Institute are the medical associations in Davos, Arosa, and the Grisons, the Swiss Association of Naturalists, the Swiss Red Cross, and the Swiss Association for Balneology and Climatology. The meteorological observatory, under the direction of Prof. C. Dorno, is in close association with the Institute, and it is therefore possible to study clinical problems from the varied standpoint of meteorology, physiology, and pathology. Voluntary studentships at the Institute will be open to a certain number of workers. The principal items of study during the vacation course will be the pathology of tuberculosis, modern views on immune biology, general and special diagnosis with exhibition of cases, X ray and laboratory demonstrations, pneumothorax and other surgical treatment of pulmonary disease, and the application of altitude treatment to diseases other than tuberculosis, such as asthma, diabetes, and malaria. Forenoons will be devoted to lectures and demonstrations, while afternoons will remain free for visits and excursions. The course is free, the lectures being delivered in French or German. Board and lodging is offered at an inclusive charge of 10 francs a day to those attending the course. Further information will be given on application to the Scientific Research Institute, Davos, Switzerland.

THE AGENT PRODUCING SYMPTOMS IN EXOPHTHALMIC GOITRE.

THE symptoms of exophthalmic goitre are usually attributed to the presence in the blood of an abnormal amount of the active principle of the thyroid secretion —a supposition supported by the known fact that administration of an excessive amount of thyroid substance to normal individuals is followed by symptoms which are similar to those characterising this disease. In order to ascertain whether thyroid secretion circulating in the blood is the agent producing the characteristic symptoms, certain tests have been applied by Sir E. Sharpey-Schafer[1] to the blood of persons suffering from exophthalmic goitre and to that of normal individuals as controls. The "intestinal test" depends on the fact that the addition of a small amount of extract of thyroid to Ringer's fluid in which a strip of cat intestine is suspended causes an increase both in the rhythmic movements of the strip and in its tone. The test is not very delicate, nor indeed specific, since many other substances may produce a similar action. The serum of normal blood contains a substance which produces marked augmentation and acceleration of the contractions of an isolated strip of cat's ileum; the effect of serum from cases of exophthalmic goitre is, however, far greater than that of the serum of normal blood. Thyroid extract also produces augmentation and acceleration of the contractions of the intestinal strip, but the action of thyroid extract is relatively slight compared with that even of normal serum, and the specific autacoid of the thyroid (thyroxin) has no effect in the intestinal strip. Moreover, neither normal blood nor exophthalmic blood, when fed to tadpoles, have any influence upon their metamorphoses, though thyroxin markedly accelerates the metamorphosis of frog tadpoles (tadpole test). These experiments, therefore, lend no support to the view that normal thyroid secretion containing thyroxin is poured into the blood in appreciably increased amount in exophthalmic goitre. Nor do they support the view that the symptoms of the disease are due to the presence of an abnormal amount of free adrenalin in the blood, since if this were the case, the contractions of the intestinal strip would tend to be inhibited instead of being augmented.

[1] Quarterly Journal of Experimental Physiology, xiii., 2.

TWIN TUBAL PREGNANCY.

ACCORDING to Mr. Leslie B. Arey,[1] of the Anatomical Laboratory, Northwestern University Medical School, Chicago, the commonest plural pregnancy which involves the uterine tubes is the combined tubo-uterine type. One hundred and nineteen cases were collected by Weibel in 1905, although probably some of them were merely presumptive and not all were twins. Plural gestation in the same tube, of which 37 genuine cases were collected by Hardouin in 1919, is next most frequent, while bilateral tubal pregnancies are rarest of all, there being less than a dozen on record. A study of the literature shows that tubal pregnancy, whether single or twin, tends to occur in women who are older by 4½ years (31·0 years) than the average age for motherhood (26·5 years). Two groups of cases may be distinguished. The first which forms three-quarters of the total consists of women who have borne children, but without recent pregnancies, and nearly one-half are multiparæ, many having had abortions. The remaining fourth consists of women who have been married a relatively long time, on an average six years, but without becoming pregnant. The explanation of this sterile interval is to be found in tubal inflammation, which is the chief factor in tubal gestation. An inflammatory process may prevent pregnancy for a variable period either by mechanically blocking fertilisation or by causing young ova to disintegrate, and on subsidence of the inflammation the tube becomes a possible nidus for the growing ovum. Rupture occurs in 58 per cent. of all cases of single tubal pregnancy. It is most frequent in tubes containing normal embryos, less common in tubes in which the embryos are pathological, and rarest in those without embryos but containing degenerated ova, so that a growing normal embryo is a special menace to the mother. Eighty per cent. of the recorded specimens of monochorionic tubal twins have ruptured, but the writer regards this figure as too high, because unruptured specimens with degenerated embryos necessarily escape recognition. The average time of rupture in single tubal pregnancy in 25 cases was at 7·7 weeks, as compared with 10·3 weeks in a series of 28 cases of twin tubal pregnancy, but it is probable that the unusual feature of twinning leads to a more representative collection of the older specimens than in single gestations, so that the later date in the twin group is not really significant. The symptoms of twin tubal pregnancy are identical with the classical picture of ordinary tubal gestation. In 9 out of 36 cases with adequate menstrual histories the embryos were of such size as to indicate that there had been one and in a few cases more than one menstrual period before pregnancy had begun. The condition has

[1] Surgery, Gynecology, and Obstetrics, June, 1923.

never yet been diagnosed before operation, but the writer suggests that in older cases a diagnosis might be established by X rays. The outcome of twin tubal pregnancies is recorded in 40 cases: 29 recovered, 10 died, and 1 was not recognised until the autopsy.

ARE FEMALES LOSING THE ADVANTAGE OF LOW MORTALITY?

THE differences in vitality of the two sexes are of perennial interest to the physician as well as to the statistician, and no completely satisfactory explanation of these differences at various ages has been advanced. Both in the United States and in this country this difference is shown even in the first year after birth. Thus in the year 1920 in the registration area of the United States the female death-rate among infants under 1 year of age was 20 per cent. and in England and Wales was 23 per cent. lower than the male infant death-rate, and an excess of male over female rate of mortality was shown consistently in each month of infancy. After infancy in the United States the excess of male over female mortality continues throughout each stage of life; while in England and Wales at ages 10–15 there is seen some excess of female over male mortality. The ages at which this excess of female over male mortality occurs in England have gradually narrowed with the course of time; and the absence of this feature in America is interesting.

In the May issue of the *Statistical Bulletin* of the Metropolitan Life Insurance Company of New York attention is drawn to the fact that in the experience of persons insured in this company a reversal of the usual relationship occurred, the female mortality at all ages exceeding the male by 2·6 per cent. in 1920, while the male excess in 1922 was 1·2 per cent. Among white insured persons an excess of female mortality over male occurred at ages 15–35 in 1920. These oscillations in the relation of male to female mortality are interesting, but their explanation is obscure. The factors producing this result are not confined to insured persons, for in 1920 taking the whole of the American registration area the death-rate at ages 20–25 and at ages 25–35 was higher in women than in men. These differences of experience in the American statistics will deserve further study, directed to a determination of the causes of excess of female over male mortality in each age-period. It is probable that similar studies of various large towns in this country would reveal exceptional sex-incidence of mortality at different ages, and that thus much light might be thrown on possibilities of preventive work. A great difficulty in pursuing this line of investigation is constituted by the delay in the issue of the census reports for a large number of counties, as without a statement of the 1921 population according to age and sex detailed death-rates cannot be calculated.

CHRONIC ECZEMA PRODUCED BY WHEAT-FLOUR.

A CASE of sensitisation to wheat-flour which produced chronic eczema is well reported[1] by Dr. H. Grenet and Dr. R. Clement. A woman of 63 had developed the trouble at 40; the lesion was so extensive and itched so badly as to preclude sleep, and this in spite of constant attempts at treatment. Inquiries into the family history showed nothing—no eczema that is, for the authors do not say if other types of toxic idiopathy were looked for. Finding that among the various drastic food restrictions bread seemed to be the only foodstuff which had never been curtailed, they prescribed a normal dietary, minus bread; and bread proved indeed to be the disturbing factor, for the patient improved forthwith. It is worth noting that a very definite intradermal reaction was obtained with flour mixed with normal serum, but this mixture gave no skin reaction. At this stage 100 g. of bread were deliberately administered and produced the typical blood crisis—drop of pressure in five minutes and a leucopenia reaching a maximum after 45 minutes. Desensitisation was effected with the same wheat and serum mixture; details are given in culinary terms—"one coffee-spoon of flour to two dessert-spoons of serum"; doses of half and later of 1 c.cm. of this mixture proved effective in spite of a somewhat sharp general reaction. The patient was then habituated to a bread diet by easy stages, till after three months she was allowed normal diet. Even then she was afraid to eat green peas or strawberries—foods which had previously provoked attacks of eczema; but on trial she found that these no longer harmed her. This additional success the authors ascribe to a wide group-desensitisation; and, given any specificity at all, the group must indeed be wide which includes wheat, strawberries, and green peas! We would suggest rather that, on the summation theory of protein irritants, while bread had been a constant factor making for trouble any other irritant could always produce an increase of symptoms, but with the wheat factor removed by desensitisation other and slighter irritants were not enough to cause an attack. The authors quote another less clearly established instance of wheat-eczema, and note that Sabouraud has pointed out the dangers of bread in certain cases; they conclude that such cases are commoner than is generally supposed. This may be true; but it is also true that seldom can the protein cause for eczema and asthma be established as quickly and certainly as in the case of Dr. Grenet and Dr. Clement.

[1] Bulletins et Mémoires de la Soc. Méd. des Hôpitaux de Paris, June 7th.

BILHARZIAL APPENDICITIS.

Dr. C. H. Bailey and Dr. E. A. Bullard,[1] of Woman's Hospital, New York, who describe a case which came under their own observation, remark that though infections with the trematode parasite schistosoma are very common in certain parts of the world, especially Africa, cases in which the symptoms are confined to the vermiform appendix are extremely rare. As is well known, the commonest sites of infection by the *Schistosoma hæmatobium* described by Bilharz in 1852 are the bladder and urethra, rectum, vulva, and vagina. Urinary symptoms, especially hæmaturia, are the commonest, both in the male and in the female, in whom bilharzia infections, according to Burfield, are 24 times less frequent than in the male. The writers have been able to find only two previous cases on record in which symptoms of bilharzia infection were confined to the appendix. The first was that described by J. Burfield in THE LANCET[2] in a man aged 36, in whom abundant ova of schistosoma were found in the submucosa of a suppurating appendix. The patient had no symptoms of genito-urinary or rectal involvement. The other case is one attributed to Aireton by Kelly of exclusive localisation of the ova of the parasite in the appendix, but no further description is given. The writers' case occurred in a woman, aged 25, who had lived in South Africa until she was 15. Her chief complaints were sterility, dysmenorrhœa, and frequent dull pains in the right lower quadrant of the abdomen for nearly two years. Examination showed an undeveloped uterus with stenosis of the cervix and evidence of chronic appendicitis which was confirmed by operation, when the entire meso-appendix and distal two-thirds of the appendix were found to be thickly studded with tiny greyish-white nodules resembling tubercles. Microscopical sections showed that the nodules were present in moderate number in the submucous and serous coats and throughout the meso-appendix. There were none in the mucous membrane or muscular layer. The nodules contained one or more ova with a very definite cell membrane, some of which were calcified. Numerous giant cells with many nuclei were seen

[1] Surgery, Gynecology, and Obstetrics, May, 1923.
[2] THE LANCET, 1906, i., 368.

adjacent to or completely surrounding an ovum. In the older lesions the ovum was surrounded by dense fibrous tissue. Examination of the blood one month after the operation showed a leucocytic count of 5600; polymorphonuclears, 24 per cent.; small lymphocytes, 52 per cent; large mononuclears, 7 per cent.; eosinophils, 17 per cent. No ova were found in the stools. Improvement took place under treatment by intravenous injections of sodium antimony tartrate in 2 per cent. solution, until in May, 1922, 14 months after the operation, the blood count showed that the eosinophils had fallen to 1·5 per cent. In the following August the patient was in excellent health and no evidence of bilharzia was found.

LABORATORY DIAGNOSIS OF VENEREAL DISEASE.

THE first edition of the Medical Research Council's report on the laboratory diagnosis of gonococcal infections and methods for the detection of *Spironema pallidum* is well known to all those engaged in the laboratory diagnosis of venereal disease, and the service which it has rendered in this field of work is undoubted. Unfortunately, it has been unobtainable latterly, having been out of print for some months. It will, therefore, be a matter of great satisfaction to those engaged in venereal diagnosis to know that a second edition[1] is now available. At the important discussion on Metastatic Gonorrhœa, the conclusion of which is reported on p. 18, doubt was thrown on the validity of some of the assumed localisations of gonorrhœal infection, in the absence of actual demonstration there of the virus. The first part of the report, dealing with the laboratory diagnosis of gonococcal infections, which has been revised and brought up to date by Dr. G. T. Western, is therefore of special value. Amongst the improvements to be noted here is the reduction in the number of alternative media given for the cultivation of the gonococcus. The preparation of nutrient agar—which can be enriched with human plasma or serum—and of tryptamine blood-extract agar and broth is dealt with in detail and gives a sufficient choice without being excessive. A valuable addition has been made to that portion of the report by Mr. J. E. Barnard which treats with the demonstration of spirochætes by dark-ground illumination. This is a method for differentiating between *S. pallidum* and other spironemata. Briefly, this method consists in estimating the number of spirals in the spirochæte to a given length, the standard suggested being the diameter of a red blood cell. As it is not a common occurrence to find spironemata in close proximity to red cells in the preparations, an ingenious eye-piece scale has been devised which introduces a number of artificial blood cells into the field of view. The procedure is simple and the apparatus inexpensive, and it should prove of very material aid in arriving at a correct diagnosis. Revising the section which treats of the staining methods to be used for spironemata, Dr. Clifford Dobell has added some valuable advice on the use of Romanowsky stains, which will be read with advantage by those making use of this procedure. The new edition of this report should prove of even greater value than its predecessor.

THE Canadian Parliament has unanimously voted to Dr. F. G. Banting an annuity of $7500 (£1500) to enable him to carry on his scientific work.

THE Gold Medal of the Royal Society of Medicine, "awarded triennially to a scientist, man or woman, who has made valuable contributions to the science and art of medicine," has this year been awarded to Prof. F. Gowland Hopkins, F.R.S., Professor of Biochemistry in the University of Cambridge.

[1] Medical Research Council Special Report Series, No. 19 revised). H.M. Stationery Office. Price 1s. 6d.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XXVII.—THE TREATMENT OF ASTHMA.

USED in its broadest sense, the term asthma is applied to a state of affairs in the smaller bronchi, which hinders the exchange of air between the larger bronchi and the alveoli of the lungs. We know little about the nature of the obstruction, but arguing from the analogy of the plain muscle of the intestine or bladder, we may assume that the bronchial muscle, which possibly contracts slightly during each normal expiration, may in asthma at one time be tonically contracted, and at another time undergoing a series of violent rhythmic contractions and relaxations. Œdema or congestion of the mucous membrane may also play a part, and is, perhaps, especially important in those cases where there is sensitisation to foreign proteins, inasmuch as the latter may produce œdema elsewhere—e.g., urticaria or angio-neurotic œdema.

From the definition given above we see that the term asthma is often used to denote a symptom, or perhaps a syndrome, rather than a disease—a syndrome in fact that may be caused by different agents. Thus in considering the treatment of asthma it is essential to diagnose the underlying cause.

(1) *Sensitisation to a Foreign Protein.*

In this case the asthma may be associated with other symptoms, such as coryza, gastro-intestinal disturbances, urticaria, angio-neurotic œdema, eczema, or acute dermatitis. Hay fever due to grass pollen is the commonest variety, but there are also the animal asthmas, where the hairs or feathers are responsible, and sensitiveness to certain foods or beverages, such as cereals, eggs, potatoes, lobster, strawberries, cocoa, &c. These foods usually produce gastro-intestinal disturbances in susceptible people, but asthma may occur as well. Finally, there may be a sensitiveness to micro-organisms of the respiratory or alimentary tracts, or to certain drugs. In some cases the diagnosis follows from the history of the case. But in any case, testing may be carried out with a series of proteins, which can be obtained commercially. The skin after cleaning is slightly scarified, and the solution of the protein applied by means of a platinum loop. If the protein is in powder form, it may be added to a drop of N/10 sodium hydrate, which has been placed over the scarified area. An urticarial wheal of at least ¼ inch in diameter indicates a positive result. Single protein testing, though it gives more satisfactory results, is a rather tedious business, and can be made shorter by the combination of various allied proteins—e.g., cat's, dog's, and horse's hair into a group, with various feathers, so that a single test answers for several different proteins. Some workers in this country and America have found that as many as 50 per cent. of asthmatics are sensitive to some foreign protein; but usually the positive results are much fewer than this. Sometimes patients rather disconcertingly react once and fail to react next time.

If a particular protein is answerable the best treatment is to avoid its presence altogether. Hay fever patients should stay in town in the early summer, or use a thick veil when walking in the country. Articles of diet containing the specific substance should not be eaten. If prevention is unsuccessful, desensitisation may be carried out by means of hypodermic injections of the specific protein in gradually increasing doses. Oral administration has also been carried out, particularly in France. These various antigens may be obtained commercially. Sensitiveness in hay fever may be tested by subcutaneous injections or by dropping solutions, gradually increasing in strength, of a mixture of pollen extracts into the eye, and after a few minutes examining for slight signs of inflammation. When a reaction is obtained, desensitisation may be carried out by injecting 1 c.cm. of a solution slightly weaker than that

which caused the ophthalmic reaction, and repeating this every three or four days. The ophthalmic reaction may be re-determined at intervals, and the amount of the injections regulated accordingly. Hydrated calcium chloride in doses of 15 gr. dissolved in water three times a day may be of value in the prevention of hay fever.

(2) *Idiopathic Asthma.*

In the same way that certain people seem to be affected with an irritable stomach, so we must imagine that a peculiarly sensitive neuro-muscular mechanism in the smaller bronchi is responsible for this group of asthma cases. In such people reflex disturbances in other parts of the body, hidden infection, and emotions may cause attacks. The attack may come on merely because the patient expects it; much good may be done by encouraging him to fight against this kind of suggestion. Worry, excessive physical or mental strain—e.g., sitting for examinations or overwork—must be avoided. If possible, a climate and surroundings should be chosen that suit the patient. The bowels must be made to act regularly; daily exercise should be taken in the fresh air; holidays should be regular. Indigestible food must be avoided, particularly at night.

Sources of infection must be eradicated, especially carious teeth showing apical infection. Dental X ray films may be of great value in diagnosis. The tonsils must be examined for disease and removed if heavily infected. Autogenous vaccines may be used. Care must be taken that children are not mouth-breathers, and, if so, simple respiratory exercises, such as deep inspirations through the nose, should be practised three or four times a day. It may be necessary to remove adenoids. In previous years various operations on the nose have had considerable vogue in the treatment of asthma, but they are now less popular.

Of recent years non-specific protein therapy has been used for asthma. The successful results obtained with stock vaccines made up from catarrhal organisms or mixed strains of *B. coli* are probably not due to their specificity against particular organisms present in the naso-pharynx or bronchi of the individual; they act because they contain foreign proteins. Peptone injections are often used for the same reason. Auld[1] advises a 5 per cent. solution of Armour's No. 2 peptone injected intramuscularly or intravenously. The first dose is 0·3 c.cm., and is gradually increased by 0·2 c.cm., the maximum dose being 2 or 2·5 c.cm. Injections are given twice weekly. The maximum dose advisable is one that just fails to give a reaction, and the temperature should be taken four or five hours after the injection, to see whether it is raised. Peptone is also given orally. Liquor arsenicalis in 5-minim doses, bromides, and particularly potassium iodide in doses up to 30 gr. a day are the most valuable drugs to prevent the onset of attacks. Mild purgation with calomel in small doses is also of value, and salol and other intestinal disinfectants have been used.

(3) *Asthma due to Infection of the Respiratory Tract.*

Asthma is often secondary to acute or chronic catarrhal infection of the upper respiratory tract, so that if the latter can be prevented or arrested, the attacks of asthma will cease. The treatment devised by Mr. Wilfrid Glegg of Birmingham is of the greatest value for naso-pharyngeal infection, and should always be tried before more elaborate means are adopted. The following is a simple way of carrying it out. A nasal funnel (these are made for me by Down Bros.) is filled with a mixture of 1 part white vaseline and 3 or 4 parts of liquid paraffin. This is allowed to run down each nostril in turn with the patient in a recumbent position, until it is felt in the naso-pharynx, when it may be swallowed. This process is carried out night and morning in chronic infection, but should be repeated 4-hourly to prevent the onset of an acute coryza, as soon as the first symptoms are noticed. It is not always possible to prevent altogether the onset of some tracheitis and bronchitis, but in my experience they are less severe than if the naso-pharyngeal infection had run its usual course.

Autogenous vaccines may be prepared from the sputum, or from swabs passed through the anterior nares into the naso-pharynx or from the naso-pharynx directly. Immediate planting out and incubation of the material is advisable. Stock vaccines may be employed, and these bacterial infections may yield to non-specific protein therapy as already described. In the chronic bronchitis and asthma so common in elderly people, many of the drugs detailed below may be used, but in addition expectorants will be useful for the bronchitis, and it may be necessary to treat incipient cardiac failure. Asthma may be present with phthisis, and treatment of the phthisis may relieve the asthma.

(4) *Treatment of an Asthmatic Attack.*

A large number of drugs have been successful in cutting short an attack of asthma or in relieving the difficulty of breathing that persists after the climax of the attack is over. A subcutaneous injection of 1 or 2 ♏ of adrenin (1 in 1000) may answer, though 10 or even 15 ♏ have been injected intramuscularly. Recently, benzyl benzoate has been administered in 20-drop doses 4-hourly, by the mouth or subcutaneously. Maximal pharmacopœial doses of tr. lobeliæ æth., tr. stramonii, tr. belladonnæ, choral hydrate, the nitrites, or nitro-glycerine may be given by mouth. Inhalation of amyl nitrite, chloroform, or the fumes made by igniting the B.P.C. mixture of potassium nitrate, lobelia, stramonium leaves, and anise fruit in equal parts, are often used during the acute attack, and cigarettes containing stramonium are smoked; but a warning must be sounded in regard to the frequent inhalation of fumes, as they irritate the bronchi, causing inflammation, and this predisposes to future attacks. Injections of atropine gr. 1/100 to 1/50 may be of value, but morphia, although very effective, must not be used if the attacks are frequently repeated, and the same applies to sprays containing cocaine.

Great relief will be experienced with oxygen inhalation, which, to be effective, must be given by means of a mask, such as that supplied with Haldane's apparatus (an anæsthetic mask will answer satisfactorily) or by means of a nasal catheter pushed right back into the naso-pharynx. The secret of successful oxygen treatment is to give it in sufficient quantity. It may be bubbled through water, so quickly that the bubbles cannot be counted. The flow must be at least 2 litres a minute to begin with, and if there is no gauge on the cylinder, it is a simple matter to test the rate by delivering the oxygen through a rubber tube beneath a pint measure which has been filled with water and inverted in a basin of water. The flow should be quick enough to displace the water in from 15 to 20 seconds. Attacks may also be stopped by hot baths, particularly if the patient inspires cool air from an inhaler which has been packed with ice.

(5) *Breathless Attacks in Elderly Subjects.*

Many elderly people are prone to attacks of breathlessness, particularly at night-time. The heart not uncommonly shows some evidence of failure, and the patients also notice that they soon get out of breath with exercise. There is emphysema and the breathing at times may become periodic, somewhat resembling Cheyne-Stokes respiration. Such cases have been called cardiac asthma. There may be some albuminuria, but although the urea in the blood is perhaps a little raised, there is no increase of fixed acid, and so these cases are not uræmic. Their pathology is rather obscure, but some recent evidence[2] points to the breathless attacks being due to bronchial spasm. Antispasmodic remedies may be of some value, but oxygen is the chief stand-by. Here again it is important to use a comparatively rapid flow, and administer it through a mask and valves, or nasal catheter. The wasteful and ineffective glass funnel should not be used.

E. P. POULTON, M.D. Oxf., F.R.C.P. Lond.,
Physician to Guy's Hospital.

[1] THE LANCET, 1921, i., 698.

[2] Campbell, Hunt, Poulton: Jour. Path. Bact., 1923, xxvi., 231.

Special Articles.

GUY'S HOSPITAL MEDICAL COLLEGE.

NEW ANATOMY, BIOLOGY, AND PHYSICS DEPARTMENTS.

BEFORE a distinguished company the formal opening of the new Anatomy, Biology, and Physics Departments by the Prince of Wales, President of the hospital, took place on July 2nd. The Prince, who was received by the Treasurer of the Hospital, Lord Goschen, and Mr. H. J. Waring, Vice-Chancellor of the University of London, proceeded to a platform erected outside the Medical School, where an address was read by the Dean of the Medical School, Dr. T. B. Johnston. In the address the scheme of rebuilding the Medical School, begun in 1897 with the physiology department and now completed by the opening of this new extension, was outlined, as well as the means by which financial difficulties were overcome, at least temporarily. The total cost of the buildings was £100,000, and part of this had to be found by borrowing; it was hoped that other benefactors would come forward to relieve the school of the incubus of debt and so enable it to carry on the work in a manner worthy of the great traditions of Astley Cooper, Bright, Addison, Gull, and Wilks. The Prince of Wales, in opening the new extension, referred to the great value of medical research and to the national importance of the work of the great voluntary hospitals and their medical schools. Science and industry alone were not enough; the sinews of war on disease must also be forthcoming, and the door of the treasurer's department was open as continuously as that of the hospital. A vote of thanks to His Royal Highness, proposed by Dr. J. Fawcett, senior physician, and seconded by Sir Alfred Fripp, senior surgeon to the hospital, was carried with acclamation, after which the Prince inspected the new buildings. After the ceremony the guests and friends of the hospital had an opportunity of inspecting the Medical School buildings as well as the wards of the hospital.

FIG. 2.

The new department of histology.

Refreshments were served in marquees in the grounds and the band of H.M. Coldstream Guards played appropriate music.

The New Buildings.

The extension provides new anatomical, biological, and physics departments, together with additional accommodation for physiology and surgery. Every possible means has been taken to render the interior of the building as light as possible, the external walls having large windows on three sides and the interior walls being of white glazed brick below and having glass partitions above as far as practicable. In the dissecting room, the operative surgery room, and the surgical research room, terrazo flooring replaces the wood blocks used in the rest of the building. The

FIG. 1.

The new dissecting room.

building comprises three floors and a basement; the roof has been made flat with a view to providing space for animal hutches and water tanks for breeding fresh water animals. The third floor is entirely devoted to human anatomy and contains a dissecting room, 80 feet by 24 feet, magnificently lit by large windows on three sides and by a large roof light, and having novel and elaborate arrangements for artificial lighting over each of the 16 tables (Fig. 1). A small demonstration theatre, capable of seating 50 students, leads off the dissecting room. There are also two specimen rooms and assistants' rooms. On the second floor is the histology laboratory, with well-arranged bench room for 73 students; communicating with the laboratory is a preparation room, where section cutting will be done for the anatomy, biology, and morbid histology departments, and for the Gordon Museum. Two small laboratories on this floor are intended for the private use of the lecturer on anatomy and the demonstrators, and there is also a large specimen room where reconstruction models of human and mammalian anatomy and embryology will be housed. The first floor is divided between the biology department, the physics department, and an operative surgery room, with a small surgical research room to be equipped as an operating theatre for experimental work on animals. The students' biology laboratory resembles the histology laboratory on the floor above, with slight modifications in the bench equipment and lighting. The physics department consists of a laboratory providing bench room for 50 students, an optical room, which will be shared by the physiology department, and research rooms for the lecturer and his demonstrators. The physics laboratory is equipped

with teak-topped tables in which are covered sunken wells with a sink and water, electric and gas connexions. Power connexions are disposed where necessary. In the basement there are a number of rooms devoted to the anatomy department as well as a demonstration theatre capable of seating 70 students. There is a well-ventilated tank-room, connected with the other floors by an electric lift, a reception and preparation room, a store room, and a large workroom equipped with a machine for cutting frozen anatomical sections, as well as photomicrographic and dark rooms.

The new extension here described was designed largely with the object of providing better facilities for collaboration between the various non-clinical departments which are now, with the exception only of pathology and pharmacology, all housed under one roof. A rather striking rearrangement is the grouping of histology with human anatomy, but this is in line with the view that the study of microscopic and macroscopic anatomy should be closely associated. The provision of a room for surgical research in close association with the anatomy department was also well planned, and should be fruitful in work useful to the school and hospital. It is unfortunate, but inevitable, in such a district as the Borough that the new extension should be partly overshadowed by neighbouring buildings, so that, in spite of the very large window space, the lighting on the lower floors is not very good. This is particularly noticeable in the physics laboratory, where artificial lighting has had to be provided on a lavish scale, and applies also, though in lesser degree, to the histology laboratory. The lighting of the dissecting room, however, is magnificent, and this is perhaps the only department in which it is essential.

The buildings as a whole are admirably equipped, and students of Guy's cannot fail to react to the stimulating effect of spacious rooms so well adapted to their purpose. We congratulate them on their new college.

RESEARCH IN TROPICAL DISEASE.

III. THE LISTER INSTITUTE OF PREVENTIVE MEDICINE.

THROUGHOUT its history the Lister Institute has never ceased to take an active share in elucidating problems of vital importance in tropical disease. It has been enabled to do so, not so much by the despatch of scientific experts to tropical regions, though this form of activity has by no means been ignored when the necessary funds permitted, as by providing facilities for systematic research, both static and experimental, in those basal sciences protozoology, entomology, bacteriology, experimental pathology, and biochemistry, &c., which determine more and more, as time goes on, the lines of solid advance.

In 1906 the late Prof. Minchin was granted laboratory accommodation in the Institute for his work as university professor of protozoology. A special department of protozoology was thus formed in which systematic research on protozoa generally, as well as on those responsible for disease in man and animals, could be intensively followed. Even before the arrival of Minchin some notable studies on the experimental infection of rats with trypanosomes and the influence of chemotherapeutic agents on such infections, by the late Prof. Plimmer and various collaborators, had emanated from the Institute. From Prof. Minchin's department came many important contributions to our knowledge of trypanosomes and, more especially, of their developmental cycles in hosts like the tsetse-fly and the rat flea. Both Prof. Minchin and Miss Muriel Robertson also enjoyed a lengthy field experience in Uganda in connexion with their trypanosome studies. The Indian Plague Commission, appointed jointly by the Secretary of State for India, the Royal Society, and the Lister Institute, engaged the services of various Institute experts, all of whom contributed materially, whether at home or at Bombay, to the solution of the plague problem as one determined essentially by the bionomics of the rat flea. To other plague-stricken areas, Manchuria, Egypt, &c., the Institute has lent its experts. In 1911 a department of entomology was instituted, in charge of which was placed the late Arthur Bacot, whose unique talents, already displayed in working out the bionomics of the rat flea on behalf of the Plague Commission, were thus recognised. Bacot's achievements during the following 12 years up to his lamented death from typhus in 1922 are possibly fresh in the minds of many readers, but here may be mentioned his work with C. J. Martin on the precise mechanism by which *B. pestis* is transferred from flea to rat, his elaborate study of the bionomics of *Stegomyia fasciata* for the West African Yellow Fever Commission, and his last experimental studies on the viruses of trench fever and typhus fever carried out at home, in Poland, and in Egypt.

The departments of protozoology and entomology, now sadly deprived of their distinguished chiefs, have throughout acted as nursing grounds for research workers from many lands in search of the knowledge that would render them more efficient for prosecuting research in tropical climes. No department of the Institute, however, has failed to yield its contribution to the sum total of studies specially devoted to tropical disease problems. Subjects such as snake-venom, bacillary dysentery, cholera, leprosy of man and rat, ankylostomiasis, and leishmaniasis have at various times engaged the attention of staff or voluntary workers, British and foreign. The departments of experimental pathology and biochemistry have, as is well known, undertaken, in recent years, intensive studies on certain diseases of nutrition, beri-beri, pellagra, rickets, osteomalacia, and scurvy. The boundary line between diseases of tropical and temperate climes wears somewhat thin at times, and such studies as these cannot fail to influence profoundly standards of hygiene and well-being in the tropics as elsewhere.

TREATMENT OF EARLY MENTAL CASES IN GENERAL HOSPITALS.

INAUGURATION OF WARDS AT MIDDLESEX HOSPITAL.

THE two new wards at the Middlesex Hospital for the treatment of early mental cases "by members of the staff of St. Luke's Hospital" were formally inaugurated on June 28th, at a meeting attended by representatives of the public bodies concerned. It will be remebered that St. Luke's Hospital for Lunatics, formerly situated in Old-street, E.C., was closed in December, 1916, when it was announced that it was to be re-established as soon as circumstances would permit near Gerrards Cross, Bucks. At the present moment the hospital has central offices at 19, Nottingham-place, London, W. 1, and runs a convalescent home at Gerrards Cross, so that the establishment of beds in the Middlesex Hospital marks a considerable advance towards its actual re-establishment as a mental hospital.

Coöperation between St. Luke's and Middlesex Hospitals.

Lord Athlone, treasurer of the Middlesex Hospital, expressed his gratitude to the authorities of St. Luke's Hospital for the part they had played in bringing about the establishment of these wards. The principle of coöperation between general and special hospitals had been widely discussed and generally accepted, but he believed this to be the first example of carrying it into practice. Mr. Arthur Cross Powell, treasurer of St. Luke's Hospital, mentioned the fact that St. Luke's was founded in 1751, only six years later than the Middlesex, and had spent the greater part of its existence on a site which, although ample in size and held on a perpetual lease at an exceedingly low rental, had come to be surrounded by tram-routes, the noise of which

by day and by night hardly contributed to the well-being of the patients. A few years ago the new site had been acquired in Buckinghamshire, and it was hoped to proceed with building there at an early date. He welcomed coöperation with the Middlesex Hospital in the present venture, and wished and predicted every success to it. Sir Coles Child described the new wards as a step beyond the out-patient departments which have already been established at some mental hospitals for the benefit of the same type of patient. The utility of these departments was seriously discounted by the fact that many people objected to going anywhere near an asylum. The present arrangement obviated this, while providing treatment by the staff of an institution devoted to the care of the insane. He saw no reason why general and mental hospitals should not coöperate in this way throughout the country. Dr. C. Hubert Bond, Commissioner of the Board of Control, expressed his great personal satisfaction, and that of the Board of Control, at the step which had been taken. Hitherto, the general hospital out-patient department had presented an impervious screen which no case of mental disease had been allowed to pass. He had long hoped that the Middlesex would find the means of doing something for these patients, and had advocated a scheme of this nature some years ago. The doors were now open, and he hoped that all teaching hospitals would follow suit.

The New Wards.

The new wards occupy the second floor of the out-patient department, which has been reconstructed for the purpose, and consist of a male and a female ward, each containing three beds, and lavatories, bathrooms, and nurses' room. The wards present a most attractive and restful appearance, being well-lighted, quiet, cool, and tastefully decorated in the manner of a bedroom in a comfortable private house. These wards are intended for the treatment of such cases of functional nervous disorder as appear likely to derive benefit by hospital in-patient treatment. Chronic cases, and those which have failed to respond to treatment elsewhere, as well as patients likely to cause annoyance to others, or cases of frank insanity, will not be admitted. Patients will be admitted from the out-patient department of the Middlesex Hospital, and during treatment they will be under the supervision of Dr. R. W. Gilmour, who was assistant medical officer of St. Luke's in its last years in the City. The resources of all the special departments in the hospital will be available for such methods of investigation and treatment as are found desirable.

NATIONAL BABY WEEK CONFERENCE.

THE Conference opened on Monday, July 2nd, and owing to the large number of delegates was held in the Caxton Hall instead of at Carnegie House, as originally intended.

Dr. G. F. STILL took the chair at the morning session, when the presidential address was delivered by the Rt. Hon. NEVILLE CHAMBERLAIN, M.P., Minister of Health. He said that, in his opinion, the most urgent matters calling for attention in regard to maternity and child welfare were an increase in the number of infant welfare centres and of health visitors, and schemes of this kind would be regarded by him with a favourable eye. He would like to see further provision to assist in reducing maternal and early infantile mortality, in which but little progress had been made, and an improved midwifery service. A great debt was owed to volunteers who started maternity and child welfare work, and there was no sphere in which voluntary assistance could be more profitably employed.

Dr. J. S. FAIRBAIRN opened the discussion on the

Causal Factors of Infant Mortality up to One Month of Age,

dealing specially with the antenatal causes. Maternal disease and prematurity, he said, were conditions largely affecting early infantile mortality, and the diseases likely to damage the child were those in which there was some poison of the system, chemical or bacterial, or where there was formation of deleterious products in the body or accumulation owing to defective elimination. Diseases due to poisons formed within the body included the group known as toxæmias of pregnancy, of which eclampsia was the most dramatic example; those due to defective elimination covered albuminuria, kidney disease, and the like, any of which might terminate the pregnancy or cause early death of the infant. It was common knowledge among obstetricians that mothers seriously ill often had average infants; the placenta and placental cells had first claim, and the fœtus lived like a parasite on the mother. Syphilis—a common cause of stillbirth and infantile death—was a curable disease, but hard to recognise in women at an early stage. Toxæmias of pregnancy, on the other hand, were usually easy to diagnose but hard to treat.

Dr. EARDLEY HOLLAND considered that intranatal causes of death might be summed up in the one word "injuries," the majority being injuries to the head. The delicate structure of the head at birth was liable to injury from forceps or even in spontaneous birth where there was a contracted pelvis. Tearing of the dura mater and cerebral hæmorrhage were specially apt to occur in premature cases, and intracranial injuries were frequent in breech presentations, the injury being caused by too quick rather than too slow delivery of the after-coming head. Dr. Holland had, in his experience, seen one infant of seven months, who died of something else, in whom a healed tear was visible.

Prof. LOUISE MCILROY said that birth should be considered as an episode, the nine previous months being regarded as equally important with later life. She believed sepsis was usually introduced by lacerations, however small they might be. In the period of rather more than two years that her special department had been working at the Royal Free Hospital there had been no case of eclampsia. The babies were not subjected to violent artificial respiration with exposure to cold air, but were wrapped in a warm towel, their respiratory passages cleared of mucus, and left quiet. They were oiled, but not washed for three days, to prevent shock and loss of heat.

The afternoon discussion on the

Value of Maternity Homes in a Maternity and Child Welfare Scheme.

was interesting for the variety of opinions expressed. Dr. JANET CAMPBELL, as chairman, said that the Ministry of Health's policy of a large number of small maternity homes had been criticised on the scores of extravagance in expenditure and staff, the difficulty of maintaining a high standard of midwifery practice in isolated units, and the small value of such institutions as training schools, all of which criticisms she thought were justified. In 1922 there were 107 maternity homes with 1275 beds; some had not been used to their full capacity, and Dr. Campbell thought that fees had perhaps proved deterrent though they were not meant to be so. There was some discussion as to the class of patient who should be eligible for maternity homes, most speakers favouring the view that they should be for normal cases. Differing views were held as to the advisability of utilising isolation hospitals for maternity cases, Dr. W. ALLEN DALEY and Dr. S. G. MOORE both approving the idea, Miss J. C. WISHART thinking it unwise, and Dr. E. R. WOODHOUSE, of Llandudno, feeling convinced that patients would be frightened to use them. A refreshing speech was made by Councillor Mrs. LEWIS, of Barry, who said she spoke as a working woman, and knew that the women of Barry regarded the home made for them by their own man as the only proper place in which to have their babies. She would greatly like to see a rota of efficient home helps who would take complete charge of the work of the homes for at least a fortnight.

MEDICINE AND THE LAW.

HOUSE-LETTING AND INFECTION: COLLINS *v.* HOPKINS.

IN this important case the question at issue was the extent of the implied warranty by the lessor of a furnished house that it is reasonably fit for the lessee to inhabit, where there has been a case of infectious disease in the house shortly before the lessee's occupation, and with regard to the case before the court, where the disease is pulmonary tuberculosis. Mr. B. M. Collins sued Mrs. E. Hopkins, a widow, for damages for breach of an implied warranty, in letting to him a furnished house at St. Albans, that the house was reasonably fit for habitation. The plaintiff's case was that it was not so fit because the defendant's husband when suffering from pulmonary tuberculosis was living in the house until six weeks before the plaintiff was to occupy it. There was a further alleged ground of claim, that the defendant's agents had expressly warranted that Mr. Hopkins was not suffering from consumption, but Mr. Justice McCardie, in his judgment, dealt only with the first point, and the agents denied having made the statements attributed to them.

In February, 1922, Mr. Hopkins was found to be suffering from tuberculosis. He was treated in a sanatorium, but was at home in July and again at the end of August till Sept. 11th, when he went to Switzerland, where he died in December. The agreement to let was made on Oct. 14th, the tenant's occupancy to begin on Oct. 26th. The plaintiff heard of the nature of Mr. Hopkins's illness on the day after he entered the house, and at once repudiated the agreement and left it. He claimed damages, including the return of a first instalment of rent (£88).

Medical evidence for the plaintiff was given by Dr. W. J. Fenton, who said that it would not be safe to take a furnished house as described, unless there had been thorough disinfection of walls and floors and fumigation under skilled supervision by the medical officer of health. In cross-examination he admitted that he knew of no case of infection proved to have arisen from the presence of a person suffering from tuberculosis in a house six weeks before a second person inhabited it. For the defence Dr. S. Vere Pearson, who had treated Mr. Hopkins at Mundesley Sanatorium, described his case, and expressed the opinion that there was no risk in the plaintiff occupying the house on Oct. 26th. He had never heard of infection in such circumstances as those described, and said that there was no recorded instance of tuberculous infection taking place in premises which an affected person had lived in and left. Dr. E. H. Lipscomb described his treatment of Mr. Hopkins at St. Albans. He had omitted to notify the case, and had not thought it necessary that the house should be fumigated. Dr. A. L. Punch was of opinion that there would have been no danger, as in the circumstances described the life of the bacillus would not have been more than a week or two. Evidence was given by the defendant and the agent who let the house.

Mr. Justice McCardie, in a considered judgment, reviewed the law relating to the subject, and had no doubt that "an appreciable measure of actual risk justifies the tenant in throwing up his contract. A man should not be called on to expose his wife and children or himself to peril." Among the matters to be considered were the nature of the disease, the degree and persistence of its infectivity, the date when the sufferer lived in the house, and the steps taken to prevent infection. In dealing with the case before him his lordship referred to the defendant as an unsatisfactory witness, who had admitted that if she had been asked what was the matter with her husband she would have answered "slight lung trouble only," and he was of opinion that the house had been left in a very dirty state for the plaintiff to go into. He also referred to the deceased as having gone to the city and about his ordinary business when warned that he might infect others. He referred to Dr. Lipscomb's evidence as to his not having notified the disease through an oversight, and regretted that no medical man should have supervised the disinfection of a house about to be let furnished.

His lordship's final summing up of his own conclusions indicate his application of the law to the facts of the particular case: (1) "I am not satisfied that the house and its contents were free from tubercle bacilli on Oct. 26th, 1922; (2) I am satisfied that there was a substantial risk that the house and its contents were so infected with bacilli on Oct. 26th as to constitute an actual danger to the plaintiff and his household; (3) while recognising the difficulties of inference on the point I should hold, if necessary, that in fact the house and its contents were so infected with tubercle bacilli on Oct. 26th as to render it unsafe for occupation. I therefore rule that it was not reasonably fit for habitation. It follows that the plaintiff was entitled to renounce the tenancy and quit the house; also that he is entitled to damages." His lordship accordingly gave judgment for the plaintiff for £130 with costs.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Education in Madras Presidency, 1917–1922.

THE report of the Director of Public Instruction for the five years ending March 31st, 1922, on the state and progress of education in Madras Presidency has recently been issued by Government. Among the items of importance to the medical profession are the following:—

(1) *Medical Inspection of School Children.*—In 1920 a system of grants-in-aid for medical inspection in aided and public schools was introduced, and over 200 schools were inspected by approved medical officers and participated in the general scheme for grants-in-aid for this work. It was originally proposed to appoint three sub-assistant surgeons to inspect Government schools and to correlate and direct the work of the other medical inspectors, but this scheme has been held in abeyance. Inspection has not yet been conducted in accordance with settled principles, universally applied; but there can be no doubt as to the urgent necessity for such inspection. Several aided secondary schools appointed medical inspectors and received grants, and some other schools, though not receiving Government grants, conducted medical inspections. So far no medical inspection has been undertaken in Government schools.

(2) *Medical College.*—The subordinate teaching staff of the Medical College has been reorganised and the system under which certain assistant surgeons were detailed for college work and given no hospital duties, while those attached to the hospitals and assisting in imparting clinical instruction to students were not given any teaching allowance, was discontinued; all assistant surgeons actually engaged in instruction, whether in the College or in the hospitals, were appointed assistants to the professors concerned and given hospital as well as teaching work and uniform rates of allowances. In February, 1920, the Government of Madras sanctioned the proposal to institute a course of training for six months in dental surgery for civil assistant surgeons and senior sub-assistant surgeons not exceeding five at a time. The first course was held in 1920 and proved a success. Post-graduate courses for civil assistant surgeons were also begun in 1920. In December, 1921, the Government of Madras directed that the students of the College should be trained in squad, company, and physical drill during their third year, and in stretcher drill and first-aid during their fourth year.

(3) *Medical Schools.*—The medical schools at Calicut, Vizagapatam, Tanjore, and Rayapuram worked throughout the period under review. In July, 1918, a new school was opened at Madura with

a staff of one superintendent and four lecturers. The strength of the schools has continued to increase. During the years 1917 to 1922 the strength of the Rayapuram school increased from 310 to 569 and that of the Tanjore school from 148 to 276. The total strength of schools in 1921 was 1262 as against 662 in 1917. Accommodation and equipment are generally unsatisfactory; the provision of hostels has become an urgent necessity for all the schools.

(4) *Physical Education and Hygiene.*—The last quinquennial report stated that "the weak point about physical education is that those who stand most in need of physical culture get least of it." This state of affairs is passing away; all inspectors report on the advance made during the last five years. Scout troops have only been really organised in Madras since 1917, but by 1920 there were 280 scout troops and packs with a total of 500 officers and over 6000 scouts. In 1921 Government approved a new syllabus on hygiene for Forms I. to III.; this syllabus was translated into the principal vernaculars, and was adopted in all middle and secondary schools.

Beri-beri in Madras Presidency.

In 1918–20 Colonel R. McCarrison, I.M.S., at the instance of the Indian Research Fund Association, undertook an investigation into beri-beri. As a result of his inquiries it was found that in Madras Presidency the disease is confined to a narrow tract on the east coast comprising the districts of Ganjam, Vizagapatam, Godaveri, Kistna, Guntur, and Nellore. No cases of beri-beri have been reported from districts lying outside this strip of coast except for a few in Vellore and in Bellary Jail. The disease attains its maximum degree of endemicity in the Kistna district, lying between the Kistna and Godaveri rivers, and is particularly prevalent in the neighbourhood of the left bank of the Kistna. At the Fourth Congress of the Far Eastern Association of Tropical Medicine held in 1921 it was recommended that governments concerned should take action to discourage the case of milled rice which contains less than the standard minimum of four-tenths of 1 per cent. of P_2O_5. The Congress also recommended the appointment of a commission, to which each country would be asked to send a delegate, which would make recommendations as to the best methods of bringing beri-beri under control. Colonel McCarrison considered that the provinces of Madras, Burma, and Bengal were sufficiently affected to require legislation; in anticipation of such action a brief memorandum on the subject of the causes of beri-beri has been prepared by him in consultation with the Director of Public Health, and this has recently been issued by the Government of Madras for propaganda purposes, translations having been made into the local vernaculars of the districts affected. Legislation for milled rice may be impracticable under present conditions, and it seems more reasonable to diffuse knowledge of the disease and its prevention than to interfere with mill-owners and their machinery.

Chemical Examiner's Report for 1922.

Major C. Newcomb's report as usual contains a number of interesting details. The total number of cases and articles examined was 3824 against 3952 in 1921. Human poisoning cases numbered 220, and stain cases 399. He says:—

"The regularity throughout the year with which the murder cases are sent to us is striking. One would expect, I think, some seasonal variation in their numbers or some indication of the 'waves of crime' of which one reads from time to time in the newspapers. . . . So far as the statistics of this department show, there is no murder season in the Madras Presidency, and waves of crime if they exist must be very choppy ones."

Of the 220 cases of suspected human poisoning, 108 showed poison, giving a positive percentage of 49·1 as compared with 40·6 in 1921. The chemical examiner, however, regrets in this connexion that more time is not available for experimental use of new toxicological methods. Of the 108 human cases in which poison was detected, mercury was found in 32 cases, arsenic in 29, and opium in 19. Of the less common poisons two were cases of cyanide, one of iodine, one of caustic soda, one of "phenyle" and one of quinine and ergot. In four cases an unrecognisable alkaloid was extracted from the viscera. In cases of animal poisoning, arsenic was the most commonly found poison, theretin, the active principle of yellow oleander, being next common. The number of cases totalled 42. Of medico-legal cases there were 27 against 21 in the previous year. Two were concerned with the identification of supposed murdered persons from bones which had been discovered. The Chemical Examiner doubts whether, in such cases, it is possible to estimate the height of the person within three inches.

"A case of some interest occurred in which the identity of some hairs was required. A woman was found murdered and grasped in her hand a tuft of hair which she presumably had pulled out of the murderer's head in the struggle which had taken place. A man was arrested on suspicion of having committed the murder and the tuft of hair found with the body and samples of the accused's hair were forwarded to us for an opinion as to whether they were the same. A microscopic examination of the broken ends of the hair found in the corpse's hand showed that the hair had been pulled out and not cut. Although to the naked eye one of the hairs seemed rather more curly, under the microscope, mounted in potash solution, they seemed identical, and to investigate the point further, as curliness is associated with oval cross-section, the two hairs were mounted in paraffin and cross-sections cut for me by the professor of pathology. No differences in the shape of the cross-sections could be found."

This case is still proceeding.

Madras, June 5th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

Medical Fees and Improved Cost of Living.

THE Ministry of Health has issued a decree addressed to the Chambers of Physicians urging the cutting down of medical fees in accordance with the downward tendency of all prices in the Republic. The Ministry calls attention to the undeniable fall in the prices of food, raw materials, and other articles, and indicates that the medical profession should adapt its fees to this general tendency if the deflation policy of the Government is to succeed. The Chambers of Physicians are asked to take the necessary steps in coöperation with other medical organisations, and report the result to the Ministry as soon as possible. This decree will not arouse much enthusiasm amongst the medical profession: physicians argue that their fees did not keep step with prices in general when the latter were going up, and that, therefore, the present medical fees are still comparatively much below other prices. The price index of medical fees is stated to be at present only 50 per cent. of the index for the average cost of living. In spite of this fact, insurance association fees have already been cut down by 10-15 per cent., and private fees have also automatically declined under pressure of the general economic situation.

Prof. C. Chodounsky.

Prof. Charles Chodounsky recently celebrated his eightieth birthday. He is one of the oldest active physicians in the Republic, and probably the last living pupil of the famous J. E. Purkinje. Chodounsky served as Purkinje's private assistant for a year whilst studying at the University of Prague. After graduation he was forced by financial difficulties to take up private practice, although his real interest lay in research. He found means, however, of carrying on private experimental work, and was also prominent in the work of various medical organisations, being for long the moving spirit of the Scientific Association of Czech Physicians. In 1884 he became associate in balneotherapy in the medical faculty at Prague, and in 1888 he began to lecture also on pharmacology, which then became his chief object of study. In 1890 he

published his "Theoretical Pharmacology," in 1896 a "Programme of Toxicology," and in 1920 a "Text-book of Pharmacology." He also published a great number of lesser studies on different problems of pharmacology, and a long series of popular articles on public health topics. He is one of the founders of Czech medical terminology. Formerly a distinguished Alpinist and sportsman, Prof. Chodounsky retains excellent health, and although he had retired from University work shortly before the war, he went to Brno (Brünn) when the new medical faculty was created there after the establishment of the Czecho-Slovak Republic, and organised the institute of pharmacology, materially assisting in the organisation of the whole faculty, and remaining at the head of the institute until he had trained his successor. He has now entered honourable retirement for the second time.

First Czecho-Slovak Tuberculosis Congress.

In May took place the first Czecho-Slovak National Congress against Tuberculosis, organised by the Society for Research in Tuberculosis, and preceded by the annual meeting of the Masaryk Antituberculosis League. There were over 350 medical men present, and 120 papers were read. The three sessions of the Congress were devoted to clinical and theoretical questions, social problems, and veterinary problems respectively. Important resolutions were adopted based largely on papers read at the Congress, and relating to the creation of special institutes for research and instruction, to the establishment in general hospitals of pavilions for advanced cases of tuberculosis in order to relieve the pressure upon sanatoriums, and to compulsory medical examination of persons who want to marry. The importance of popular public health education, especially for children, was also emphasised, and the Government was asked to study the question of the early immunisation of children. School hygiene, housing and factory inspection, and Government support of necessitous tuberculous persons were also the subjects of resolutions, together with inspection of meat and milk, and the appointment of a permanent committee for the study of tuberculosis in cattle.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are the principal health statistics of a number of towns and urban districts for the year 1922:—

Name of town.	Estimated population (mid-year).	Birth-rate.	Death-rates per 1000 of population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with influenza.	Infant mortality		Maternal mort. in childbirth.
							Legit.	Illegit.	
Coventry C. ..	129,000	18·9	10·6	1·2	1·0	2·2	70	78	2·5
Grimsby C.B. ..	83,600	24·0	13·1	1·4	1·3	2·6	91	124	3·5
Eastbourne C.B.	53,700	13·7	10·9	0·7	1·6	1·8	45	37	—
Colchester B. ..	43,740	18·0	11·9	1·1	1·4	1·2	60	79	1·3
Poole B.	43,250	20·0	14·4	1·5	1·4	2·3	77	132	4·6
Swindon B. ..	55,680	19·0	12·2	1·3	1·0	2·8	58	122	0·9
Maidstone B. ..	38,300	18·0	11·1	1·0	—	—	53	114	2·9
Hyde B.	34,100	16·5	12·7	1·1	1·3	3·0	65	33	0·0
Barry U.D. ..	39,310	23·6	11·6	1·1	0·9	2·6	84	94	3·2
Beckenham U.D.	33,160	16·0	10·7	0·8	1·5	2·6	55	50	0·0

C. = city. C.B. = county borough. B. = borough. U.D. = urban district.

Coventry.

Dr. E. H. Snell submits a table showing that the mean age at death has gradually increased from 35·1 in 1895 to 45·4 in 1922; a chart showing that since 1881 the birth-rate has come down from the neighbourhood of 35 to about 20, and the death-rate from 20 to 10; and another chart showing the drop in infantile mortality in the present century from 150 to 70. Attention is drawn to the need for covering the Spon End tank, through which passes about one-third of the city's water-supply. The housing question is still urgent. Houses closed before the war have had to be reopened and remain occupied; only gross cases of overcrowding can be dealt with, and Dr. Snell gives the details of 10 very gross cases. He also refers to the lessening frequency of rickets in the out-patient rooms of large hospitals. Of 28 notified cases of ophthalmia neonatorum, 25 made complete recoveries, 2 partial recoveries, and 1 is totally blind.

The school dentists think that the practice of charging a shilling fee for dental treatment is an obstacle. Only 1660 children out of 3338 referred for treatment actually received treatment. The total fees paid in 1922 only amounted to £68. The Corley Camp open-air school for 16 children did good service. Dr. A. H. Newton mentions the case of two of the children, who continually suffered from colds and bronchitis at home, and spent the summer at the camp, going about without shoes and stockings, without a suspicion of colds or bronchitis. The open-air class at Centaur-road school also did well. Miss E. K. Brown, the organiser of physical training, gives an interesting report of her work. She now has 52 elementary schools, one special school, and two open-air classes under her supervision. A daily physical training lesson and deep-breathing exercises in the fresh air, folk-dancing, and organised games are some of the features. Special attention is given to swimming; at the swimming gala 23 first-class certificates were awarded to girls and only 5 to boys. Miss Brown finds a great deal of mouth-breathing is simply due to long-standing neglect to use a handkerchief effectively.

Dr. Newton reports unfavourably on the way meals are supplied at the municipal restaurant. He thinks there might be more variety, more green vegetables, and more fat, but he is chiefly concerned about the service. A plateful of each course is put out on the table ready for each child coming in. The child finishes the meal in just over five minutes. One is not surprised, therefore, to hear that there have been statements from parents that the meals make the children sick. The only cutlery supplied is one spoon for both courses. Such meals can hardly be called educational in table manners.

Grimsby.

Dr. B. C. Stevens reports among the needs of Grimsby—provision for advanced consumptives (the borough already owns the site on which to build a 30-bed hospital), a maternity home, and an infants' hospital. The V.D. clinic, which has been removed from the Grimsby and District Hospital to more commodious premises in Queen-street, is proving increasingly useful. It is coöperating well with the ante-natal clinic and being used by seamen in a satisfactory manner. Dr. Stevens emphasises the need for the better protection of food from contamination, and especially advocates the wrapping of bread in waxed paper before it leaves the bakery, a method which has the additional advantage of keeping the loaf fresh. He also draws attention to the present dirty methods of handling meat, and points out that imported meat is better protected than the home product.

Eastbourne.

Dr. W. G. Willoughby points out that the most serious adverse factor in public health matters is the want of adequate housing accommodation. "Private enterprise in building, seriously injured by well-meant but pernicious legislation in 1907–10, was finished off

by the war. Municipal housing is a necessity because the private owner does not like families with children and does not mind if a good tenant is an old resident of Eastbourne or not. In letting municipal houses preference is given to large families, and length of residence in Eastbourne and war service are taken into consideration. Apart from non-residents, families without children, and families with fair accommodation, there are about 400 families needing houses. This number includes families in hut tenements, which ought to be abandoned as soon as possible." Of the four genuine cases of enteric fever notified, three are said to have acquired the infection elsewhere. A fifth notified case, proved to be acute miliary tuberculosis, gave a positive Widal reaction, evidently the result of inoculation during the war.

At the tuberculosis dispensary Dr. W. Muir Smith continues to use tuberculin in selected cases with satisfactory results. The municipal midwife, who acts as a health visitor when not engaged in obstetrical work, attended 52 confinements. The full fee, 25*s*., for her services was paid in 39 cases. Eleven mothers were provided with dentures, eight free of cost.

Colchester.

Dr. W. F. Corfield draws attention to the decline in tuberculosis and the increase in cancer. He again points out the pressing need for more houses, and states that habitations are still in use that should not be tolerated. There is a small revival of private building. An outbreak of diphtheria at the Essex County Hospital was promptly stamped out by "swabbing" and the isolation of 12 positive contacts, over and above the 13 cases of the disease. The long-tubed bottle, after a short return to Colchester, has again been suppressed, and Dr. Corfield would like to see it prohibited by law.

Poole.

Dr. R. J. Maule Horne tells us there are signs that Poole is coming into its own as one of the most picturesque health-resorts on the South Coast, and that for natural beauty its harbour stands comparison with Sydney or Rio de Janeiro. The water is purified by chlorination and additional pumping is being installed as a safeguard against a very dry season. Cesspools are being gradually replaced by sewers; a table shows that there were still 379 in existence last year. Dr. Horne wants a modern refuse plant and condemns the three tips as uneconomical and bad public health. "Fires, fumes, flies, fungi, and four-footed fomites are the legacy." Of the 145 new houses completed during the year, 100 are occupied by new residents, so that little has been done to relieve the shortage in the congested districts. During Health Week oral sepsis was wisely chosen as the special theme.

Swindon.

Dr. Dunstan Brewer reports that influenza, as in other towns, was epidemic in the beginning of the year. A severe form of whooping-cough, with pneumonia as a common complication, was also prevalent at the same period. The mortality, owing to overcrowding, was very high among the home-treated cases, and in future an endeavour will be made to provide accommodation for such cases in the fever hospital. The opening of the maternity home in July and the establishment thereat of an ante-natal clinic has supplied a long recognised need. Anxiety as to the water-supply was relieved by the wet summer, and in the meantime progress with the new adits at Ogbourne has provided for the future.

The corporation have completed 90 new houses outside the borough and private enterprise 24 within, but this has not relieved overcrowding, when the natural increase of the population is taken into consideration. Nevertheless, as the report of the sanitary inspector puts it, the outlook in Swindon is much better than in some towns. Dr. Brewer considers that the class which has suffered most is that of newly married couples in moderate circumstances. The majority of first babies are born to couples living in rooms, frequently in a single room. Families, as they increase in size, cannot move to larger houses, as formerly. Swindon's most urgent need is a hospital of about 150 beds for surgical and medical cases. The present accommodation is a private 12-bed hospital belonging to the G.W.R. Medical Fund Society, and a 32-bed cottage hospital. Swindon has grown very rapidly and used to depend upon the London hospitals.

Maidstone.

Dr. C. P. Oliver reports no extraordinary causes of sickness or invalidity during the year. Analytical reports of the water have been satisfactory. The gathering-grounds and reservoirs continue to be patrolled daily by an employee of the Water Company, and have been inspected by Dr. Oliver in company with Prof. J. Eyre, Dr. A. Greenwood (County M.O.H.), and Mr. Ware, the engineer, and invariably found to be in a satisfactory condition.

Hyde.

Dr. Nicolas Gebbie, who took over the duties of M.O.H. from Dr. J. Bennett on Feb. 6th, 1922, reports that except for an outbreak of measles in the summer the borough has been fairly free from infectious diseases. Only about 20 per cent. of the sanitary conveniences are w.c.'s with cistern flush, 65 per cent. being w.c.'s with hand or waste-water flush, and 15 per cent. pails or privy middens. The 1500 ashpits in the borough create a serious nuisance. Warnings have been issued with regard to smoke from factory chimneys, but no prosecutions were undertaken.

Overcrowding is serious, and in some parts of the borough there are three and four families living in a four-roomed cottage. Indiscriminate mixing of the sexes at all ages results. "Under these circumstances," says Dr. Gebbie, "we cannot hope for a strong race, physically, mentally, or morally." One of the pavilions at the new fever hospital forms part of the county tuberculosis scheme, and admits advanced cases of consumption. Owing to unemployment, fewer mothers have been working at the mills, and Dr. Gebbie thinks the loss to the family income was more than compensated for by the greater care taken of the children and the increased facilities for breast-feeding.

Barry Urban District and Port.

Dr. Percy W. Kent describes the small outbreak of small-pox which occurred in Barry in 1922. Two sailors, feeling ill, left their ship in London and arrived in Barry on the morning of Oct. 5th. (During the voyage there had been two seamen down with illnesses diagnosed as chicken-pox.) One of the sailors infected an unvaccinated boy, aged 4 years, who was notified as small-pox and died from a confluent attack. The notification was followed by the discovery that both sailors and the aunt of the boy were suffering from modified small-pox. All three had been vaccinated in infancy, and one of them revaccinated at 14 years of age. Prompt measures were taken as to the supervision and vaccination of contacts, and no further case occurred. Subsequently the captain of the ship was summoned by the London Port Sanitary Authority for giving incomplete information and fined £50. Another case of small-pox arrived in the port from Lisbon in July, and was removed to the small-pox hospital.

The urban district council manages an accident and surgical hospital, with a medical staff consisting of the M.O.H. as superintendent, a surgeon, three assistant surgeons, and a radiographer. Dr. G. H. Winch, the V.D. medical officer, states that the clinic, opened in October, 1921, in the same building as the maternity and child welfare and school clinics, is ideally situated, that the patients are keen and regular in their attendance, and that a large number of seamen are treated. In his opinion provision for the treatment of seamen is, as a rule, not properly organised. Dr. Kent gives evidence to show that the water-supply is not safe, and this matter is receiving the careful attention of the council.

Beckenham Urban District.

Dr. J. M. Clements reports that the urban districts of Beckenham and Penge have provided a joint maternity home, the midwives from which attend some extern cases, while an arrangement has been made with the two certified midwives practising in the district to attend other extern cases. In addition to these two midwives there are a number of unqualified persons who go out as monthly nurses under the supervision of doctors in charge of the cases. Dr. Clements is anxious for a more precise definition of the degree of supervision to be given by the doctor in charge of such cases. He also complains of the unsatisfactory arrangement by which the district council has everything to do for mothers and infants except the supervision of the midwives, which is carried out by the county council, although the work of the midwives is indissolubly bound up with the whole scheme of maternity and child welfare.

The school clinic needs extension, partly for the purpose of housing the dental clinic under the same roof. The school dentist, Mr. Robert A. Waters, shows that of 2298 children referred for treatment, 1788, or 78 per cent., were actually treated. Of the remaining 22 per cent., 18 refused treatment, two failed to keep appointments, and two said they would get private treatment, but generally failed to do so. The 18 per cent. definite refusals were sometimes due to the attitude of the parents, sometimes to the attitude of the older children, who refuse to attend even at the wish of their parents.

SCHOOL MEDICAL SERVICE.

Derbyshire.

DURING the year 26,744 children were medically examined, 26,389 of these coming under the routine age-groups. Of the latter 6702 were referred for treatment, and during the year 2505 children received treatment for eye trouble and 3605 for ear disease. Operations for diseased tonsils and adenoids were performed upon 1155 children; these are excluded from school for two weeks after operation. 151 cases of ringworm were treated by means of X rays; 19,936 dental extractions and 13,526 dental fillings were performed. Dr. Sidney Barwise demonstrates that the young boys and girls in Derbyshire are taller and heavier than the average of the same class in England and Wales, but in the later ages the advantage is not maintained. Examination of the secondary school children reveals the fact that postural deformities with the exception of flat-foot are much less common in boys than in girls. Of 816 boys examined, 54 had some degree of flat-foot; 2 per cent. had colour-blindness. Of 1803 girls examined in the secondary schools 270 had enlarged or septic tonsils and adenoids. Goitre was present in 194. In the more marked cases it was fairly easy to persuade the parents to have the condition treated, but in far too many of the milder cases it is still regarded as just Derbyshire neck, something that runs in the family. Tables are given showing the personal equation of the doctor in discovering and recording defects; the percentage of children referred for all conditions varying in different doctors' districts from 33·6 to 11·5 per cent. During the year 861 children were excluded from school, 105 because they were verminous, 755 for medical reasons, 287 of these being on account of tuberculosis. There were 17 permanent exclusions from school, 7 of them being on account of mental condition, 2 for epilepsy, and 2 for defective vision. Dr. Mary Gallagher gives the results of 983 cases of enlarged tonsils and adenoids upon which she operated. In one half of these cases the condition had caused secondary complications such as suppurating middle-ear disease or chronic catarrh of the middle ear with deafness, chronic inflammation and discharge from the nose. In a considerable number of cases operation had to be deferred owing to treatment for anæmia, septic teeth, &c., having to be carried out. In one case the child had to be treated for six months before she was fit for operation. Of the 983 cases operated on, 890, or 90 per cent., were discharged cured and 83 improved. In ten cases there was no improvement. In several cases operations were performed on children who had already been operated on with the guillotine—that is, a piece of the tonsil had been sliced off—and after a short time the symptoms had unfortunately recurred. Dr. Gallagher states that the cardiac condition of 30 children was such that the operation was performed without an anæsthetic. We should consider it doubtful, however, whether such a procedure would be likely to do less damage than an operation under carefully administered anæsthesia.

The school dentist submits an interesting report. He finds that 80 per cent. of the children inspected were referred for treatment, and 20 per cent. actually treated. He insists that any propaganda for the prevention of caries in children must depend on the teachers.

The Services.

ROYAL ARMY MEDICAL CORPS.

AN examination for not fewer than 20 commissions in the Royal Army Medical Corps will be held in London on August 1st. Those who intend to compete should lodge their applications with the Secretary of the War Office not later than July 20th. The presence of candidates will be required in London from July 30th. A full statement of the duties and emoluments of the service will be furnished to prospective candidates on written application to the Secretary (A.M.D.1), War Office, Whitehall, S.W. 1.

Maj. A. H. Bond, from the half-pay list, is restored to the estbt.

Capt. R. Stowers retires, receiving a gratuity.

Capt. K. Masson retires on account of ill-health.

Temp. Hon. Maj. J. L. Dickie relinquishes his commn. and retains the hon. rank of Maj.

Temp. Capt. D. S. Taylor relinquishes the acting rank of Maj.

The undermentioned temp. Capts. relinquish their commissions and retain the rank of Capt.: T. A. Rothwell, S. Herbert (on account of ill-health contracted on active service), and W. J. E. Stuttaford.

TERRITORIAL ARMY.

Capt. H. J. Davidson retires, receiving a gratuity.

General List: Maj. V. H. Wardle (late R.A.M.C., T.A.) to be Capt. and relinquishes the rank of Maj.

General Hospitals: Lt.-Col. W. E. Hume and Capt. (Bt. Maj.) R. E. Kelly relinquish their commns. and are granted the rank of Col.

Sanitary Companies: Capt. R. J. S. McDowall relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

Capt. J. Derham-Reid relinquishes his commn. and is granted the rank of Maj.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdrs. W. L. Martin and A. L. Hewitt to be Surg.-Capts.

ROYAL AIR FORCE.

Squadron Leader A. S. Glynn to be Wing Commander.

Flight-Lieutenants R. J. Aherne, P. H. Young, and P. T. Rutherford to be Squadron Leaders.

DEATHS IN THE SERVICES.

Surg.-General Sir Benjamin Simpson, C.B., K.C.I.E., late Surgeon-General and Sanitary Commissioner with the Government of India, died at his residence in London on June 27th. Born in 1831, he qualified with the M.R.C.S. in 1852 and graduated M.D. at Aberdeen in the following year, when he entered the Indian Medical Department. After serving as civil surgeon and on special duty in various parts of India, he was appointed guardian to the Maharajah of Kuch Behar during his visit to Europe in 1878, and in 1881 was appointed Deputy Surgeon-General with the S. Afghanistan Field Force. In 1882 he became Sanitary Commissioner to the Central Provinces, subsequently serving as Surgeon-General in the Punjab and in Bengal. He received the C.B. in 1859 and the K.C.I.E. in 1887.

HARROGATE SPA: NEW FACILITIES OF TRAVEL.

AT the invitation of the Mayor and Corporation a number of medical men, including representatives of the *British Medical Journal* and of *The Lancet*, paid a week-end visit to Harrogate on June 30th and July 1st. The occasion was the inauguration of a new Pullman Car service, arranged jointly by the London and North-Eastern Railway Company and the Pullman Car Company, Ltd. The new service of trains is to commence on Monday, July 9th, making the journey from King's Cross to Harrogate, or vice versa, in precisely four hours, with a non-stop run between London and Leeds. Each train will consist of two first-class and four third-class specially-built cars, comfortably furnished and tastefully decorated, with arrangements for serving meals to 180 passengers during the journey and adequate lavatory accommodation. Judging by the trial trip, in which many important railway officials took part, the facilities provided leave nothing to be desired.

The medical men making up the party were as follows: Dr. John Adams, Dr. L. D. Bailey, Dr. D. M. Barcroft, Dr. W. Langdon Brown, Sir Bruce Bruce-Porter, Dr. A. G. Buchanan, Dr. H. S. Buchanan, Dr. A. T. Davies, Dr. Henry Dutch, Dr. H. A. Ellis, Dr. R. Fortescue Fox, Dr. E. P. Furber, Dr. A. T. Bulkeley Gavin, Dr. Philip Hamill, Dr. W. D. Kirkwood, Dr. H. Moreland McCrea, Dr. B. Myers, Dr. H. H. Sanguinetti, Dr. W. M. Crawford Watson, Dr. Arthur Westerman, Dr. E. C. Young.

On Saturday afternoon a visit was paid to the Royal Bath Hospital and Ransom Convalescent Home, which is designed for patients unable to afford private treatment in Harrogate, suffering from skin diseases, rheumatic and kindred diseases, disorders of the liver, gout, locomotor ataxy, and lead poisoning. Patients are now charged 10*s.* 6*d.* per week towards the cost of their board, unless specially exempted. Admission is on the recommendation of annual

FIG. 1.—Harrogate in Summer: the Valley Gardens.

subscribers, life governors, or contributing bodies. Visitors were received by the Chairman, Mr. C. A. Rhodes, J.P., and shown round the hospital by one or other of the six physicians.

The visitors were entertained at the Majestic Hotel, where the Deputy Mayor presided at a public dinner on Saturday evening. "The Town of Harrogate" was proposed by Mr. R. L. Wedgwood, Chief General Manager of the L. & N. E. Railway, who spoke of the growth of Harrogate as a health resort during two generations without any glamour of historical record, and foreshadowing further improvements to come. The Deputy Mayor, Mr. Alderman J. Sheffield, having replied, the toast of "Our Guests" was proposed by Sir A. Ernest Bain, Chairman of the Wells and Baths and Publicity Committee. Sir Davison Dalziel responded for the Pullman Car Company, Dr. R. Fortescue Fox for the medical guests. Dr. Fox spoke of spas as a national asset, expressing his personal belief in the curative virtues of British waters and British climate, each spa having its own individual character and value. In the long run success would be achieved by each spa developing its own natural resources. Britain was happy in possessing the most tonic spas of the world, which would, if properly known, attract multitudes of foreigners. Utilisation of these natural products was, he said, a necessity for our present stage of civilisation,

FIG. 2.—The Royal Bath Hospital, viewed from the air.

with its large floating population of tired people. He hoped soon to see the long delayed recognition of spa treatment by State and universities.

Dr. David Brown, speaking for the Harrogate Medical Society, emphasised four points in connexion with the treatment. In the first place, Harrogate made provision for persons of various means. For a hundred years the Royal Bath Hospital had provided 150 beds for the service of the poor, with an endowment of £2,200 a year and supported to the extent of six-sevenths by the visitor element. This hospital remained open all the year round, drew its patients from all parts of England, and treated 2000 patients annually. The honorary staff numbered 17 individuals and work of clinical importance and investigation was proceeding. He ventured to say that if patients of the rheumatic group reached them early enough, the bed-ridden cripple might be abolished altogether. In the second place, arrangements were in force to enable the "new poor" (with an income of under £600 a year) to obtain a combined and inclusive investigation of their case at a cost not exceeding 15 guineas. Thirdly, a school of balneology had been set up for bath attendants, who numbered in Harrogate over 200, no departmental instructor now being appointed who had not had a course of instruction lasting over two years. And lastly, much thought was being given to the scientific care of the baths and waters, an analytical chemist—a permanent servant of the Corporation—being concerned in working out the basal problems for the rationalisation of approved balneological measures.

The company attended a special concert at the Royal Hall on Saturday evening. On Sunday morning followed an inspection of the Royal Baths, closed to the public for the occasion, guests being asked to make personal use of any of the baths, of which 78 scheduled varieties are set out in the list of treatments for the current season. These are divided into three classes: (1) under the heading Balneological being included many varieties of saline-sulphur bath and douche, Nauheim, Turkish, Russian, and Berthollet baths, massage-douche on the Aix system, Vichy douche, peat baths and packs, and many others; (2) under the heading Accessory Treatments being included inhalation treatment, liver packs, paraffin wax baths, and remedial and mechanical exercises; while (3) Electrical Treatments comprise high frequency, cataphoresis, diathermy, and other currents.

Correspondence.

"Audi alteram partem."

A NEW WORD FOR "DEFATTED" VACCINES.

To the Editor of THE LANCET.

SIR,—In my paper [1] published in the last number of the *British Journal of Experimental Pathology* I gave an account of a method of preparing antigens from *B. tuberculosis* and some other Gram-positive bacteria, and I provisionally described the bacterial antigen so prepared as "defatted," a word that had been used conversationally in my laboratory. I pointed out at the same time that by the term "defatted" it was by no means intended to imply that all fatty or lipoidal substances present in the micro-organisms so treated had been removed. Only some of the lipoidal substances are taken away in this mode of preparation by washing with acetone after formalin treatment. It is plainly desirable, however, that the term "defatted" should not come into general use. It is as false, I am afraid, to the laws of language as it is to the experimental facts. I propose to introduce a new word to describe the vaccines or antigens prepared by this or similar methods of extraction. The essential factors in the process are the fixation treatment by formalin and the successful acetone extraction which the fixation permits. The bacteria so treated become, as I have described, non-acid-fast and Gram-negative, and are changed in appearance. They have been thoroughly washed out, and I propose to call them "diaplytes" from the Greek word πλυτός, washed, in its intensive form διαπλύτος, washed through and through. I propose to speak of "diaplyte vaccines" or "diaplyte antigens," and in the process of their preparation I should describe the acetone used as being the "diaplytic agent." I think there is justification for introducing a new word for the description of these vaccines, and it seems desirable to use one which has no previous connotations in pathology.

I am, Sir, yours faithfully,
GEORGES DREYER.

Department of Pathology, University of Oxford,
July 3rd, 1923.

[1] Some New Principles in Bacterial Immunity, their Experimental Foundation, and their Application to the Treatment of Refractory Infections, Brit. J. Exper. Pathol., 1923, iv., 146.

THE DIFFERENTIAL DIAGNOSIS OF SMALL-POX AND CHICKEN-POX.

To the Editor of THE LANCET.

SIR,—The main interest of the "Mild Small-pox" discussed by Dr. J. H. Garrett in his article in THE LANCET of June 23rd is its differential diagnosis from chicken-pox; and the special relevance of that lies in the financial and communal results that flow from its correct apprehension and exposition. It comes to this. If a given case be chicken-pox it costs someone, say, one guinea. If it be small-pox, it costs someone else, say, £200. A single case, to which the writer was called, was afterwards calculated to have cost almost exactly that sum. Another single case was calculated to have cost £500. The fact is this. The freedom, which many elect to enjoy, of being able to take an attack of small-pox whenever exposed to it, is a most expensive luxury to all concerned. That is the heart of the matter.

As the present unvaccinated condition of the community throws on all of us who are qualified to practise medicine the onus, whether we like it or not, of being assistants in the matter of endeavouring to keep down this portentous communal expenditure, just so it behoves us all to be equipped with a knowledge of the fundamentals of the differential diagnosis of small-pox and chicken-pox. I have laboured in season and out of season to pass this knowledge on to my colleagues ever since the late Dr. T. F. Ricketts first impressed it on me in 1897, when he went for his summer holidays that year and left me in charge of the diagnosis of London's small-pox. The differential diagnosis, of course, in a close case, turns on the due observance of many points. But the upper extremities usually afford the strongest single item of evidence. They should be exposed to the shoulder; placed in a good light; and then *read*. Not another movement nor a word is usually necessary. The writing is usually all there, to be read by those who know the key. Centrifugal is small-pox; centripetal is chicken-pox. For those who are less expert and desire to use every possible care in arriving at a diagnosis, there may be repeated the advice given in my book "How to Diagnose Small-pox" (edition 1913, page 35).

"Make a practice of plotting out the rash on a diagram of the figure. This most useful practice is strongly recommended. Incidentally it is evidence of care having been exercised, and is useful subsequently if a question is raised about the correctness of the diagnosis.

"The act of dotting in the rash compels close observation of its distribution, and often of itself leads to a correct solution. We shall see presently that a diagnosis of small-pox can sometimes be made, after all the scabs have gone, by noting the situations of the scars or stains which have been left on the skin by the rash. Make a diagram, therefore, no matter how rough, of any case that is not perfectly straightforward. You will be surprised how much it may help you. It may by itself clear up a case that has puzzled you very much."

This advice has been followed by myself in hundreds of the cases which have been referred to me for final adjudication in London and elsewhere during the last 20 years, and its value has been attested over and over again by numerous colleagues and assistants.

I am, Sir, yours faithfully,
W. MCCONNEL WANKLYN, B.A. Camb.,
London, June 30th. M.R.C.S. Eng., D.P.H.

IS DIABETES MELLITUS A PROGRESSIVE DISEASE?

To the Editor of THE LANCET.

SIR,—A categorical answer to this question might be possible if the symptom-complex generally known by the name diabetes mellitus were a definite pathological entity, invariably arising from the same cause and always running a similar course, but this is by no means the case, and it therefore does not permit of a plain "yea" or "nay," any more than a similar question regarding a rise of temperature or the existence of painful sensations would do. Glycosuria with hyperglycæmia may arise in at least a dozen different ways, and with each the effects of treatment, and even the progress of the lesion in the untreated condition, varies so widely that it is impossible to lay down any general principle as to the progress of the resulting metabolic defects. As Dr. Langdon Brown has pointed out, all observers interested in the subject "must be familiar with cases which have become apparently stationary as a result of treatment by alimentary rest"; on the other hand, cases in which alimentary rest, however carefully carried out, has not sufficed to stay the progress of the condition must be equally familiar; and the same is true of insulin, for although a certain degree of immediate improvement can usually be obtained, permanent recovery of tolerance after a course of injections is by no means invariable. The reason undoubtedly is that we are not dealing with a pathological entity which always responds in the same way to similar treatment, but with a protean condition which no one form of treatment is able to control.

At the present time it is fashionable to assume that diabetes mellitus is invariably due to disease of the pancreas, disturbances of carbohydrate metabolism arising from other causes being referred to simply as glycosurias. In the absence of some reliable means for distinguishing pancreatic from non-pancreatic cases during life such a classification is merely juggling with words, but fortunately the means are now available, and by appropriate analyses of the blood, urine, and fæces it is possible to determine whether there is deficiency of the internal or external secretion

of the pancreas in any case of diabetes, and also to recognise, or exclude, most of the other causes known to give rise to hyperglycæmia. Even if we limit the term diabetes mellitus to those instances in which disease of the pancreas can be shown to exist in this way however, we are still far from being able to answer the question in point with precision, although we are nearer doing so, for it would seem that the progress of the disease can be stayed, and permanent improvement be brought about, either by alimentary rest or insulin, when the hyperglycæmia is dependent entirely, or largely, upon a functional deficiency of the internal secretion of the pancreas, also that its progress, under suitable dietary restrictions, is slow when the condition arises as a result of sclerosis of the gland so that the state of the patient is analogous to that of a partly de-pancreatised dog, but that when the deficiency is brought about by an attempt to control, and compensate for, some other cause interfering with carbohydrate metabolism no treatment directed toward the pancreatic factor alone is of more than temporary benefit.

The only answer, therefore, which can at present be given to the question under discussion in my opinion, is that, since diabetes mellitus is not a disease but a symptom-complex arising from a variety of causes, each case is more or less a law unto itself, and whether it will progress or not depends upon the accuracy with which it is diagnosed and how far suitable methods of treatment are applied to the particular conditions discovered.

I am, Sir, yours faithfully,

P. J. CAMMIDGE.

Nottingham-place, Marylebone, W., June 26th, 1923.

ETHYL CHLORIDE AS AN ANÆSTHETIC FOR MINOR OPERATIONS IN CHILDREN.

To the Editor of THE LANCET.

SIR,—All anæsthetists will read with interest Mr. S. F. Rose's article on this subject in THE LANCET of June 23rd. They will doubtless agree with all he says as to the anæsthetic virtues of ethyl chloride, but those who know how to administer it by the "open method" will certainly disagree with his dictum that "breathing with admixture of air is obsolete and unsatisfactory." Indeed, to many it will seem less enlightened to deprive a patient, particularly a child patient, of free oxygen and to enforce breathing to-and-fro into a closed bag, than to administer an anæsthetic with a free and unlimited supply of fresh air. Surely, this method must be safer than that in which all air is excluded, and the mind of the modern hygienist must revolt at the idea of a patient inhaling "the residue left from a previous administration." Mr. Rose acknowledges that children are not good subjects for nitrous oxide. Is not this because they bear deprivation of oxygen badly, and because, in them, this gas without oxygen quickly produces asphyxiation? Why, then, does Mr. Rose think that children will take ethyl chloride better without air than with it? Would he argue that fresh air is bad for children?

Mr. Rose confesses that the closed method has "one drawback"—viz., that "it may cause struggling and holding of the breath," and he mentions the "natural alarm" of the patient excited by its odour. He states that *both* the anæsthetist's hands are required to hold the face-piece in position—no wonder the little patient is alarmed! Contrast this with the open method, in which only a wire mask covered with domette is lightly applied, with one hand, at an angle with the bridge of the patient's nose, at first somewhat away from his mouth; and contrast the sudden presentation of the pungent vapour in a closed bag, with the gradual dropping of the ethyl chloride upon the mask, so that its vapour when inhaled is neither too pungent nor unpleasant. Mr. Rose also confesses to having experienced difficulties owing to—"holding the breath, laryngeal spasm, syncopal attacks, obstructed breathing, and vomiting." All these difficulties I submit are directly due to the closed method of administration, which enforces concentration of the vapour and causes holding of the breath and laryngeal spasm: while syncopal attacks and vomiting are in direct proportion to the duration of the rebreathing. The risks of overdose are great, and syncopal attacks and cessation of breathing are signs of overdose. Mr. Rose advocates abolition of the ocular reflexes, but in my view this is courting disaster, for when the corneal reflex is abolished the coughing reflex is also abolished; thus the sentinel of the larynx is put out of action and the risk is incurred of the patient being drowned in his own blood, or of his lungs being invaded by other foreign matter. I know some throat specialists who will not begin an operation for removal of tonsils and adenoids unless the patient's coughing reflex be brisk.

With the open method, on the other hand, I have not experienced these difficulties, except vomiting, and this rarely, in properly prepared cases, unless too deep an anæsthesia has been induced, or the induction of anæsthesia has been unduly delayed. For these reasons, some years ago, I abandoned the closed method in favour of the open method, and I teach my students at the hospital that the closed method should never be used when the open method is available, because it is more dangerous, and because it is wrong to risk unnecessarily a patient's life, for so trivial an operation as the extraction of a tooth.

I am, Sir, yours faithfully,

HARVEY HILLIARD,
Senior Anæsthetist and Lecturer on Anæsthetics
June 26th, 1923. at the Royal Dental Hospital.

FIBROMA OF THE OVARY.

To the Editor of THE LANCET.

SIR,—Dr. A. W. Owen and Dr. H. A. Lediard have discussed a type of tumour in which I still take a great deal of interest. One matter of clinical as well as pathological importance is the presence or absence of ascites as a complication. I noted, when I had the opportunity of examining a very large number of solid tumours of the ovary and uterus in the surgical wards of the Samaritan Free Hospital, that peritoneal effusion by no means necessarily means malignancy. It is seen where the tumour has a perfectly smooth surface, and may be absent where there are plenty of outgrowths or inflammatory patches. Is it not, perhaps, due to lymphatic obstruction?

I am, Sir, yours faithfully,

ALBAN DORAN,
Consulting Surgeon, Samaritan Free Hospital.
Palace Mansions, West Kensington, July 2nd, 1923.

ANCIENT SPANISH PHARMACY JARS.

To the Editor of THE LANCET.

SIR,—The very fine collection of Hispano-Moresque Pottery, made by my brother, Francis W. Mark, is to be sold at Christie's on July 10th. It contains some rare pharmacy jars of the fifteenth century. I cannot help thinking that some of them would be a very valuable addition to any of the medical museums in England, and hope some generous buyer may, perhaps, help to keep them in this country. Some of them were exhibited at a social evening at the Royal Society of Medicine this time last year, and you were good enough to note the fact in THE LANCET. An illustrated catalogue will be sent to you by Messrs. Amor who manage the sale. My brother is grieved that the collection should now be dispersed by auction, as his ambition was that it should be acquired for the nation.—I am, Sir, yours faithfully,

LEONARD MARK.

49, Oxford-terrace, Hyde Park, W., June 28th, 1923.

*** This is a remarkable collection of pharmacy jars, and we agree with Dr. Mark that it ought to be kept intact and in some suitable centre for inspection. We hope that a purchaser with the needful public spirit will present himself on July 10th.—ED. L.

THE PROPHYLACTIC TREATMENT OF PUERPERAL SEPSIS.

To the Editor of THE LANCET.

SIR,—That chloroform is the commonest cause of post-partum hæmorrhage I have long recognised, and in consequence whenever I have had to use it preliminary to using the forceps, I have prepared for such result by administering a drachm of ext. ergot liq. In my opinion the commonest cause of puerperal sepsis is gonorrhœa of a chronic variety, the secondary organisms, being the fons et origo mali, preventing the healing up of tears of vagina or perineum even when carefully sutured, even when puerperal fever be not produced, and the use of an organic preparation of silver has prevented the onset of ophthalmia neonatorum. I well remember being called to a primagravida who was suffering from false pains, and discovered chronic gonorrhœa to be present. I had ten days in which to get her disinfected, but by means of plugs saturated with acid. carbol. and glycerine 1 in 20 I achieved success, and although forceps were used and the perineum torn and sutured, her temperature never rose above 98° F., and the tear healed perfectly.—I am, Sir, yours faithfully,

Blackpool, July 1st. FR. S. PITT-TAYLOR, M.B., Ch.B.

EXPERIENCES WITH ETHANESAL.

To the Editor of THE LANCET.

SIR,—I have used ethanesal for nearly 2000 cases in eight hospitals, as well as in private practice, and I should now like to state that whatever its chemical composition, ethanesal has proved in my hands to be an anæsthetic capable of producing unconsciousness with relaxation, without pulmonary sequelæ, and in most cases with an absence of post-anæsthetic vomiting. My list includes abdominal, orthopædic, throat, cerebral and cerebellar operations, and I believe the conclusion of operators and nurses coincides with mine—namely, that ethanesal gives better results than ordinary anæsthetic ether. From my notes I find that slight sickness occurs in about 15 per cent. of the cases, severe sickness in not more than about 1 per cent. At two hospitals—the West End Hospital for Nervous Diseases and the Hospital for Epilepsy and Paralysis, Maida Vale—sickness was always absent, though many of the operations lasted two or three hours.

I am, Sir, yours faithfully,

CHARLES T. W. HIRSCH.

Hyde Park Gate, S.W., June 24th, 1923.

Obituary.

SIR JAMES REID, BT., G.C.V.O., K.C.B., M.D., C.M. ABERD., LL.D. ABERD. AND GLASG., M.D. R.U.I. (HON. CAUSÂ), F.R.C.P. LOND.,

PHYSICIAN-IN-ORDINARY TO THE LATE QUEEN VICTORIA, TO THE LATE KING EDWARD, AND TO KING GEORGE.

Sir James Reid, who died on June 28th at the age of 73, was a trusted royal physician through three generations and a distinguished member of the medical profession.

Born on Oct. 23rd, 1849, he was the eldest son of the late Dr. James Reid of Ellon, Aberdeen, and was a descendant of old Scottish stock on both his father's and mother's side. His early education was received at the Aberdeen Grammar School, where he distinguished himself by being dux and gold medallist in 1865. From here he went to the University of Aberdeen, and graduated M.A. in 1869 with honours and the gold medal, and in 1872 M.B., C.M., with highest honours, while three years later he proceeded to the M.D. degree. Shortly after graduating in medicine and surgery he came to London, where he entered on practice in Upper Westbourne-terrace for two years, and spent another two years in Vienna. Returning to this country he joined his father in practice at Ellon, where he remained till he was appointed resident medical attendant to Queen Victoria on the death of Dr. William Marshall in 1881. At Windsor Castle he acted in conjunction with Sir William Jenner, and in consequence of the failing health of that physician-in-ordinary to Her Majesty, Dr. Reid was formally appointed in 1889 to the position and received in the same year the C.B. In 1895, three years after being elected a Fellow of the Royal College of Physicians of London, he was promoted to K.C.B., and on the occasion of the Queen's Diamond Jubilee was made a baronet. On the accession of King Edward, Sir James Reid was appointed physician-in-ordinary to His Majesty and subsequently to the present sovereign. Sir James Reid's services to Queen Victoria were unremitting, paying two official visits daily wherever the court might be located, while in later years those visits were even more constant. He was a frequent visitor to foreign countries with King Edward, who as a mark of special favour granted him an honourable augmentation to his arms—namely, one of the lions of the Royal Arms of England, the Royal Stags, supporting the coat, wearing round their necks a chain carrying an escutcheon charged with the Royal Crown.

Sir James Reid, who was promoted G.C.V.O. in 1901, was an honorary LL.D. of Aberdeen and Glasgow, M.D. hon. causâ of the Royal University of Ireland, and an hon. F.R.C.P. Ireland, and his various appointments included those of consulting physician to the Convalescent Home for Officers at Osborne, to King Edward VII. Sanatorium at Midhurst, to the Prince of Wales's General Hospital at Tottenham, and to the Royal Ear Hospital. He was a retired Surgeon Lieut.-Colonel in the 2nd Battalion of the Gordon Highlanders and a justice of the peace for Aberdeenshire.

He married in 1899 the Hon. Susan Baring, daughter of Lord Revelstoke and then maid of honour to Queen Victoria, and leaves two sons and two daughters.

JOHN GIRVIN, M.R.C.S. ENG.,

COLONEL, A.M.S. (RETIRED).

LAST week there died in the person of John Girvin a loyal public servant, an educated practitioner, and an able administrator. Born in 1861 he entered St. Bartholomew's Hospital as a student in 1882, after an "apprenticeship" at Dorking—an unusual occurrence even in the "eighties," and qualified M.R.C.S., L.R.C.P. in 1886, receiving his first commission in the Army Medical Service in July of that year. From Colchester he proceeded to India, where he remained for six years, afterwards serving in Ireland, Egypt, and Cyprus. Later he was appointed to the medical charge of the Guards in Wellington Barracks, and for over two years was secretary to Sir Arthur Sloggett. He was subsequently sent to Sierra Leone and then to India a second time as senior medical officer at Hyderabad, Scinde. He returned home in 1913, and during the war helped to form a new hospital for Gallipoli, being appointed, firstly, as chief-in-charge of the advanced base hospital, and secondly, as Deputy Director of Medical Services, a position he held until the evacuation of the troops. After Gallipoli he again served in Egypt, where he was in charge of the 27th General Hospital. On returning to England after the war he fell into ill-health, caused in part by the stress of military service and in part also by the loss of his only son, and he retired with the rank of full colonel at the end of 1918. By temperament Colonel Girvin was silent and reserved, and when selected to serve in a sphere of action where ceremony and ritual are essential observances, his love of order, method, and precision caused him to respect formality and to appreciate the marks of dignity and responsibility. No one, testifies one of his colleagues, could be more faithful to his corps nor more meticulous in regard to the honour of the medical service than was John Girvin.

EDWARD LIDDON, M.D. EDIN., M.R.C.S., L.S.A.

Dr. Edward Liddon, who died at Taunton on June 26th at the age of 92 years, was one of the best known practitioners in West Somerset during the second half of the nineteenth century. The son of Captain Matthew Liddon, R.N., he received his medical education at King's College, London, becoming M.R.C.S. in 1852 and L.S.A. in the following year. Proceeding to Edinburgh he graduated M.D. in 1854, taking the gold medal for his thesis. He also studied in Paris and later became a Medical Associate of King's College. After holding appointments at Bath Hospital and at the Consumption Hospital, Brompton, he joined an uncle in practice at Taunton in 1855, and carried on a large general and consulting practice until he retired in 1902. At the Taunton and Somerset Hospital, in which he always maintained a generous interest, he held the post of hon. physician for many years, becoming later a consulting physician and finally president. His lifelong aim was the improvement of the status and education of nurses; he was largely responsible for the foundation of the Nursing Institute attached to the Taunton Hospital, and was a pioneer in the work of providing village nurses to attend the poor. Dr. Liddon had many interests outside his profession; he was a J.P. for Somerset and a leading Churchman and educationist, being prominent in the establishment of the Huish School, now one of the most successful secondary schools in Somerset. An enthusiastic volunteer, Dr. Liddon retired with the rank of Surgeon Lieut.-Colonel of the 2nd Vol. Batt. of the Somersets. Hunting was his recreation; he was well known with the local packs of staghounds and foxhounds and was master for many years of the Taunton Vale Harriers. A man of strong personality, he held decided opinions, but was not carried away by prejudice. He was very widely respected by medical colleagues and public alike, and his benefactions among his poorer patients were many but not generally known. Dr. Liddon was twice married and leaves a widow and two sons.

Medical News.

UNIVERSITY OF OXFORD.—At recent examinations the following candidates were successful:—

EXAMINATION FOR DEGREE OF M.CH.

Charles H. Carlton, St. John's.

FINAL EXAMINATION FOR DEGREE OF B.M.

Materia Medica and Pharmacology.—George R. P. Aldred-Brown, Keble; Eric N. Allott, Balliol; Leslie J. Barford, Queen's; Louis W. H. Bertie, St. John's; Robert B. Bourdillon, University; Vernon H. Brink, Hertford; Clarence S. Broadbent and Thomas A. J. M. Dodd, Queen's; Leslie O. F. Fysh, St. John's; Samuel Harris, Jesus; Thomas B. Hodgson, Queen's; Alfred Kendrew, Christ Church; Raymond Lewthwaite, Magdalen; Philip Morton, Keble; Eric L. Newell, Jesus; William D. B. Read, Magdalen; Thomas E. Ryves, Trinity; Bernard G. Scholefield, Christ Church; Richard W. A. Simmons, Oriel; Robert A. Walsh, Magdalen; Arthur Q. Wells, St. John's; Evelyn C. Whitehall-Cooke, Queen's; David O. Williams, Jesus; and Rosa S. Wordsworth, Lady Margaret.

Pathology.—Murray McCheyne Baird, New; Richard E. D. Cargill, Christ Church; Cyril W. Carter and Thomas A. J. M. Dodd, Queen's; Cyril L. Elgood, Balliol; Kenneth J. Franklin, Hertford; Douglas R. Gawler, University; Cyril A. H. Green, Trinity; Harold E. Harding, Oriel; John R. B. Hern, New; John A. Macfadyen, Brasenose; Victor P. Robinson, St. John's; James P. Shaw, Balliol; Insall M. Sidley, Christ Church; Harold N. Stokoe, Pembroke; John G. S. Thomas, Hertford; Bertram E. Tompson, Brasenose; George P. Wright, Exeter; and Mathilde E. F. Bugnion and Janet M. Vaughan, Somerville.

Forensic Medicine and Public Health.—Owen D. Ballinger, University; David T. Barnes, St. John's; Edward F. Chapman, Magdalen; Alexander M. Cooke, Jesus; Richard S. Creed, Magdalen; Robert van Buren Emmons, New; John A. Macfadyen, Brasenose; George F. L. Mitcheson, Christ Church; Eric B. Strauss, New; Tom S. Townsend, Jesus; Horace F. Turney, Magdalen; and Cicely D. Williams, Somerville.

Medicine, Surgery, Midwifery.—John W. Alden, non-collegiate; Philip W. Boobbyer, Keble; Thomas A. Brown, Exeter; Alexander D. Dyson, Corpus Christi; Robert van Buren Emmons, New; Reginald V. Facey, Brasenose; Humphrey C. Hill, Hertford; James P. Shaw, Balliol; Arthur L. B. Stevens, Christ Church; Eric H. Watkins, Hertford; Arthur Q. Wells, St. John's; Claude R. Young, University; William A. Young, Jesus; Sibyl R. Eastwood, Society of Oxford Home-Students; and Cicely D. Williams, Somerville.

UNIVERSITY OF SHEFFIELD.—At examinations held recently the following candidates were successful:—

M.D. EXAMINATION: Robert Platt.

FINAL M.B., CH.B. EXAMINATION.

Oswald H. Billington, Reginald L. Brown, Alice C. Caiger, Ida Coates, Henry Cretney, Andrew S. Drummond, Clifford S. Dunbar, Denton Guest (with 2nd class honours), William H. Harding, Mona E. Hatherley, Albert B. Nutt, Muriel R. Powell, James E. Schofield, and Annie D. Sykes.

THIRD M.B., CH.B. EXAMINATION.

William F. L. Castle, George S. Davidson, Edward M. Dearn, Alys M. Gregory, Sidney G. Meanley, and Oscar H. Silverman.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—L. P. Garrod, St. Bart.'s Hosp.; B. Hart, Sheffield; L. K. Htoe (Sect. II.), London Hosp.; and M. S. Mahmud (Sect. II.) and B. Teverson, St. Mary's Hospital.

Medicine.—L. P. Garrod, St. Bart.'s Hosp.; E. W. Hicks, St. Thomas's Hosp.; and B. Teverson, St. Mary's Hosp.

Forensic Medicine.—L. P. Garrod, St. Bart.'s Hosp.; E. W. Hicks, St. Thomas's Hosp.; J. A. H. Sykes, Edinburgh; B. Teverson, St. Mary's Hosp.; and H. Whitby, London Hosp.

Midwifery.—D. Dimitrijevitch, Oxford and St. Mary's Hosp.; L. P. Garrod, St. Bart.'s Hosp.; L. Statnigrosh, Middlesex Hosp.; and B. Teverson, St. Mary's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: L. P. Garrod, B. Hart, E. W. Hicks, and B. Teverson.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The Congress in 1924 will be held in Bordeaux from June 4th to 9th inclusive. The President will be Lord Burnham, and the local hon. secretaries Dr. Rene Cruchet, Professor of Medicine in the University of Bordeaux, and Mr. G. Faure, treasurer of the Chamber of Commerce, Bordeaux. The meetings will take place in the University. Special arrangements are being made for travelling and hotel accommodation.

EPSOM COLLEGE.—The seventieth annual general meeting of the Governors of Epsom College was held on June 29th at 49, Bedford-square, London, W.C., Sir Henry Morris, treasurer, presiding. The scrutineers reported that the successful candidates for pensionerships and foundation scholarships were: Ordinary Pensionership, Adelaide Lynch; Foundation Scholarships: Thomas M. Newton, Jeffrey O. Timms, James D. Johnston, Irwin J. McGhie, Denis A. Sanford, H. Vincent Adcock. In submitting the annual report of the Council Sir Henry Morris drew attention to the loss which the College had sustained by the death of Mr. Clement Locke Smiles, and by the retirement from the Council of Mr. Walter Archibald Propert, the grandson of the founder of the College, and announced that Mr. W. Douglas Crossley, who entered the College as a Master in September, 1888, and was appointed bursar in September, 1890, was about to retire, after having served the College for practically 35 years. He further reported that Mr. Bluett, one of the honorary auditors, had died since the last annual general meeting, and that the Council proposed that Colonel Norman C. King, the Registrar of the General Medical Council, should be appointed an honorary auditor in his place. Continuing, Sir Henry Morris referred to two pension funds recently instituted, and mentioned that the Council had decided to propose that, in consequence of the increased cost of living, amendments in the by-laws should be made with the view of permitting a somewhat larger income than that hitherto held by persons wishing to become candidates for various pensionerships—namely, £100 a year instead of £60. He stated that steps had been taken to begin at once the work of rebuilding the nave of the chapel in harmony with the new chancel, in spite of the fact that the funds in hand were not sufficient for the purpose, and he urged all friends of the College to do their best to secure contributions for this purpose. In thanking those persons and organisations that had assisted the Royal Medical Foundation attached to the College by obtaining donations and subscriptions during the year, he stated that it had long been customary to elect as vice-presidents those who had collected the sum of £1000, and as the Rev. Walter J. Barton, the late headmaster, had completed this sum, the Council proposed that he should be elected a vice-president of the College. At the termination of the proceedings a cordial vote of thanks to the chairman was proposed by Dr. Raymond Crawfurd, seconded by Mr. Hollis Walker, K.C., and carried with acclamation.

SOCIETY FOR THE STUDY OF INEBRIETY.—The next meeting of the society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on July 10th, at 4 P.M. Prof. A. Louise McIlroy will open a discussion on the Influence of Alcohol and Alcoholism upon Antenatal and Infant Life.

CALEDONIAN MEDICAL SOCIETY.—The thirty-eighth annual meeting of this society was held on June 29th in the rooms of the Aberdeen Medico-Chirurgical Society. Dr. David Rorie took as the subject of his presidential address the Career of Dr. George Boswell, who was surgeon to King James VI. of Scotland. The meeting was largely attended, and at the dinner the same evening 70 members and friends were present. It was arranged to hold the next meeting of the society in Liverpool under the presidency of Dr. David Smart.

COMPLIMENTARY DINNER TO DR. WILLIAM MAYO.—The Surgical Section of the Royal Society of Medicine gave a complimentary dinner to Dr. William Mayo, of Rochester (Minnesota), at the Hotel Cecil on June 27th. Mr. James Berry, the President of the section, was in the chair, and there was a large attendance of Fellows and Members of the section from all parts of the United Kingdom. After the loyal toasts, the chairman proposed "Dr. William Mayo," giving a vivid account from first-hand information of the Mayo Institute at Rochester, and some pleasing glimpses into the lives of the Brothers Mayo. Dr. Mayo, in responding, spoke of the zeal for education in a State of 3 million inhabitants which had 11,000 students attending its University and 8000 more intimately connected with it. The accumulated income of the Mayo Clinic, amounting to 7 millions, not including real estate of 3½ millions, had now been handed over as permanent endowment to trustees who understood what surgical treatment meant, and he hoped that the Clinic was thus safe for a generation. Sir Berkeley Moynihan proposed "American Surgery," reciting the names and achievement of a series of American surgeons, most of whom bore Irish names, amongst them Dr. William Mayo, who, he said, was "the greatest statesman in surgery of all time." Among the characteristics of American surgery he included masterly technique, fertility in suggestion, integrity of utterance, and an unbounding hospitality to new ideas. Dr. Donald Balfour, who responded, sketched the problem of surgery in American rural practice and the possibility of raising the general standard of surgery in the U.S.A.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—At a meeting of the General Council, held on June 26th, at 1, Wimpole-street, W., with Sir George Makins in the chair, the Council nominated the honorary officers of the Association for election at the annual meeting. The President, Sir George Makins, having intimated his desire to retire from office, it was unanimously agreed on the proposal of Mr. Carson, seconded by Dr. Myers, that Sir Arbuthnot Lane be nominated to serve in his place. It was proposed from the chair and unanimously agreed that, if willing, Sir Humphry Rolleston be nominated for re-election as chairman of the Executive Committee. On the proposal of Dr. C. B. Heald, seconded by Dr. C. O. Hawthorne, it was agreed to make no further nominations for the office of honorary treasurer, and Sir John MacAlister was unanimously nominated for re-election and also Mr. H. J. Paterson and Dr. H. MacCormac as hon. secretaries. The reports of the hon. treasurers and secretaries were received and approved for submission to the annual meeting. It was agreed that the date of the annual meeting be fixed for Friday, July 13th, at 5.30 P.M.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The programme of the next quarterly meeting, to be held in London next week, is as follows: On July 10th, at 11.30 A.M., at 11, Chandos-street, a paper will be read by Dr. R. M. Stewart, entitled General Paralysis: Its Unsolved Problems. At 3 P.M., at the Royal Society of Medicine, 1, Wimpole-street, W., Lieut.-Colonel E. Goodall will give his presidential address on Considerations, Bacteriological, Toxicological and Hæmatological, and others therewith associated bearing upon the Psychoses, and at 4.30 P.M. Dr. J. G. Porter Phillips will give an address on the Early Treatment of Mental Disorder: A Critical Survey of the Out-patients' Department. On July 11th, at 10 A.M., at 11, Chandos-street, a discussion on the Relation of Chronic Sepsis to the So-called Functional Mental Disorders will be opened by Dr. Henry A. Cotton, followed by Sir W. H. Willcox, Dr. William Hunter, Dr. D. Chalmers Watson, and Dr. T. C. Graves. Dr. Clement Lovell will read a paper on the Surface Tension of the Serum in Anxiety Psychoses. In the evening the annual dinner of the Association will be held at the New Metropole Hotel, Northumberland-avenue, W.C. On July 12th, at 10 A.M., at 11, Chandos-street, a paper on the Histological Examination of 110 Cases of the Pituitary Body of Patients Dying in Asylums and Hospitals will be read by Sir Frederick Mott, F.R.S., and Dr. I. M. D. Robertson, and one on the Psychogenic Factor in the Causation of Mental Disorder by Dr. Thos. Beaton. At 3 P.M. a visit will be paid to the Maudsley Hospital, Denmark Hill, under the guidance of Dr. Edward Mapother. On July 13th, at 10 A.M., at 11, Chandos-street, the following papers will be read: Basal Metabolism in Mental Disorders, especially Dementia Præcox, and the Influence of the Diathermic Current on the Same, by Dr. James Walker; the Diagnosis of Dysenteric Infections in Mental Hospitals, by Dr. A. A. W. Petrie; and the Ranchi European Mental Hospital, India, communicated by Major Owen Berkeley-Hill.

TUBERCULOSIS CONFERENCE AT BIRMINGHAM.—The ninth annual conference of the National Association for the Prevention of Tuberculosis is to be held in the University, Edmund-street, Birmingham, from Thursday, July 12th, to Saturday, July 14th. The Lord Mayor of Birmingham will formally open the conference at 10.30 A.M. on Thursday, when a discussion will follow on the Care of Advanced Cases of Tuberculosis. The other main subjects for discussion will be the Extent and Nature of Damage Done by Tuberculosis Derived from Infected Milk; the Work of Tuberculosis Care Committees; the Relative Prevalence of Tuberculosis Among Workers in Different Trades; and the Notification of Tuberculosis with the Proposed Amendments of Procedure. The public address on Friday evening, at 7.30, will be delivered by Sir Robert Philip on the Actual Position of the Tuberculosis Problem To-Day. Saturday will be left free for tours and visits to institutions.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, JULY 3RD.

The Value of Garden Suburbs.

THE Earl of ONSLOW moved the second reading of the Housing, &c. (No. 2) Bill, which has passed through the House of Commons.

Lord DAWSON of PENN said that for the cure of disease they were increasingly moving in the direction of open-air treatment. In the near future hospitals would be to a large extent constructed in the open with open wards. If they were going to use fresh air for the cure of disease, how much more profitable if they used it for its prevention. Any remedy, however, which was too ambitious would be crushed under its own weight, and any reform which did not carry educated opinion with it would defeat its own end. Therefore it appeared that this Bill went as far as in the present state of knowledge and public opinion it was wise to proceed. He urged the Government to give more generous consideration to that part of the Bill which was concerned with the housing of communities—to those provisions which enabled town planning and garden suburbs to be tried and expanded. Nothing could be more productive of permanent good than the extension of town planning and of garden suburbs. The Government ought to give as generous a trial as possible to the garden suburb schemes set forth in the second part of the Bill.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 27TH.

SCOTTISH HEALTH ADMINISTRATION.

THE House went into Committee of Supply on a Vote of £1,773,730 for the salaries and expenses of the Scottish Board of Health, Captain FITZROY in the chair.

Captain ELLIOT (Parliamentary Under Secretary for Health for Scotland) said that his department had provided three main lines of statistics which it seemed to him would be of great value in estimating the effect of the recent trade depression on the health of the population. In Scotland in the years 1910–14 the average death-rate from tuberculosis was 172 per 100,000; in 1918 the rate was 118; in 1922, 110. They were therefore very considerably better than they were in the years before the war. In the years 1910–14 the five years' average for England and Wales was 140; in 1921, 113; in 1922, 112. As to phthisis, in Scotland the average death-rate for 1910–14 was 111, while in England and Wales it was 102. In 1921 the Scottish rate for phthisis was 81, while it was 88 in England and Wales. In 1922 the Scottish rate was 83, while in England and Wales it had gone up to 89. These were index figures, but they were most valuable at arriving at the true state of affairs. He would give the Committee the 1918 death-rates for some other countries. In that year the death-rate from tuberculosis (all forms) was in Scotland 160, and in England and

Wales 169. In Budapest it was 611; Warsaw, 591; Lodz, 775; Jugo-Slavia, 400 to 500; and Czecho-Slovakia, that was Prague, 386. The death-rate from influenza in all forms in our country for the three waves that swept over the country was 477 per 100,000, so that in the foreign countries he had quoted the death-rate was in relation to tuberculosis greater than the death-rate in this country from influenza.

The average infantile mortality-rate per 1000 births for 1871–80 was in Scotland 123 and in England and Wales 149. That was before the grants in regard to child welfare were made. The figures for 1911–15 were 113 in Scotland and 149 in England and Wales. In 1920–21–22 the figures for Scotland were respectively 92, 90, and 101, while for England and Wales they were 80, 83, and 77. In the first quarter of last year the rate was 141. That was when maternity and child welfare grants were given, while for the corresponding quarter of this year the figure was 98. As to insurance and sickness benefit the expenditure per week per insured person was 2*d.* in 1913 and 2¼*d.* in 1914, and the expenditure on males on sickness benefit was less than 2¼*d.* in 1920 and less than 2¾*d.* in 1921. The increase must be balanced by the fact that a big increase in the percentage of benefit had been decreed by statute. These three lines of argument went far to substantiate the contention he had advanced as to the surprising extent to which the present system was preserving the health of the people under the great industrial depression.

Referring to the tuberculosis grant, the hon. gentleman said that, roughly speaking, the Board had been able to implement their promise to pay 50 per cent. of the grant to the local authorities. A reduction was contemplated in three cases because the figure of the local authorities in those areas was a very high one, and higher than that of other local authorities who were approximately in the same position. The estimated cost of the middle ward in Glasgow was 71*s.* per week, and there was a wide discrepancy there. The figure for Glasgow for the maintenance of tuberculous patients treated in fever hospitals was 57*s.* per week, and the corresponding Mid Lanark rate was 46*s.*, as compared with the Edinburgh figure of 37*s.*, the Dundee figure of 36*s.*, and Aberdeen 38*s.* It would therefore be seen that there was, in the Board's opinion, need for further scrutiny of these figures. The reductions suggested would still enable the Glasgow authority to pay some 40*s.* per week, which was higher than Edinburgh, Dundee, or Aberdeen. Glasgow, with 29 per cent. of beds, proposed to spend 39 per cent. of the expenditure, and in the middle ward, with 10 per cent. of beds, it was proposed to spend 15 per cent. of the expenditure. The Scottish local authorities had had one or two meetings on questions of public health, and in particular there had been a very interesting conference in connexion with venereal diseases. There was a widespread feeling that further powers of compulsion should be given to these authorities by statute, particularly in relation to children. He hoped that the report of the committee appointed to inquire into the high death-rate among mothers would shortly be presented.

Mr. SULLIVAN moved to reduce the Vote by £100.

Dr. CHAPPLE said there was one very satisfactory feature of the report of the Scottish Board of Health, which was that notwithstanding the enormous unemployment and the tremendous fall in wages the death-rate was going down, the disease-rate had been going down, and mortality from tuberculosis had been going down. The unsatisfactory aspect of the report was that part in which they were told that the lack of improvement in regard to tuberculosis was largely due to the fact that they had not enough sanatoriums and not enough money. It was a tragedy that there should be people in Scotland suffering from any dire but preventable and curable disease who could not get the advantage which modern medical science and modern preventive treatment made possible for them.

In the debate which followed, Mr. MAXTON, a Glasgow Labour Member, said that at a time when an epidemic was raging in Scotland, disease was at its worst, and the death-rate at its highest, hon. gentlemen on the Ministerial side of the House, in the interest of saving money, which the right hon. Baronet the Member for the City of London approved of, issued a circular condemning children to remain in the breeding ground of infection. He called it murder, and the men who initiated the policy were murderers. They had the blood of infants on their hands.

The hon. Member was called upon to withdraw, but he refused to do so, and eventually the Speaker was called in, and Mr. Maxton was suspended from the service of the House by 258 votes to 70.

The withdrawal of the hon. Member led to further trouble on the Labour benches, and before order was finally restored three other Glasgow Labour Members, Mr. Wheatley, Mr. Stephen, and Mr. Buchanan, were also suspended.

Mr. MACPHERSON, continuing the debate, referred to the work of the Highlands and Islands Medical Service, which he said read like a romance. One fact that had always impressed itself upon him was the heroism, gallantry, the kindness and self-sacrifice of the Highland doctor. He should be glad if it was possible where the district was remote and difficult to increase what was called the mileage of these doctors. The same praise could be meted out to the nursing staff. The State should see to it that every doctor in the Highlands had a house provided out of the funds of the Board. Referring to the outbreak of botulism, which occurred in his constituency last year, Mr. Macpherson said that nothing could have exceeded the care with which the Board undertook their investigations and the promptitude with which they were on the spot.

The motion to reduce the Vote was negatived on a division by 209 votes to 118, and the vote was then agreed to.

Typhus Fever in Skye.

Mr. MAXTON asked the Under Secretary to the Scottish Board of Health what were the conditions prevailing in the Island of Raasay, Skye district, which rendered possible a recrudescence of typhus fever; and what action had been, or was proposed to be, taken to remove the predisposing cause of a recurrence of typhus fever in the island.—Captain ELLIOT replied: While the primary cause of the outbreak of typhus fever in this locality last year is unknown, there is no reason to believe that the epidemic resulted from causes other than those social and personal conditions of life which are usually responsible for this disease. The medical officer who was sent to deal with the outbreak experienced considerable difficulty in taking measures with a view to preventing a recurrence of the disease owing to the active opposition of a proportion of the inhabitants to the treatment considered necessary by him. The matter was referred to the local authority, who did not consider it expedient in the whole circumstances to resort to compulsory measures.

Unemployment and Sickness in Salford.

Mr. TILLETT asked the Minister of Labour whether he was aware of the serious condition of the 10,000 unemployed in Salford and the ill-health arising therefrom; and what steps he proposed to take to mitigate the evil and danger of this state of affairs, which had remained practically stationary during the past six months.—Sir M. BARLOW replied: I am aware of the regrettable extent and duration of the unemployment in Salford. Assistance has been given to various relief schemes in the locality, both through the Ministry of Transport and through the Unemployment Grants Committee, and, of course, any further schemes put forward would receive careful consideration. In addition, I understand that the Ministry of Transport are now in communication with the Lancashire County Council with a view of inaugurating in the district some substantial road works for the relief of unemployment.

Medical Research Grant.

Mr. BECKER asked the Minister of Health how the grant of £135,000 made to the Medical Research Council was disposed of; the chief channels of its disposal; and was £5000 the only sum which was apportioned to cancer research.—Lord E. PERCY replied: Roughly, one-third of the annual grant of £130,000 is allocated by the Medical Research Council to the payment of their research staff and the maintenance of their central laboratories at the National Institute for Medical Research. The remainder is distributed in grants in aid of research work carried out by universities, hospitals, and other centres throughout the country. In addition to the sum of £5000 expended in grants for work directly upon cancer, radium owned by the Government to the value of over £70,000 is made available by the Council for approved research into the treatment of cancer. I would, moreover, remind my hon. friend that the problems of cancer may be solved sooner, and perhaps only, through advances in fields of medical science other than the direct study of the disease itself, and that, accordingly, advances in the knowledge of cancer are effectively promoted by the grants for research in the more primary parts of the medical sciences. I may add that the allocation for cancer work varies from year to year, as the Council find useful opportunities for supplementing the work done by the Imperial Cancer Research Fund and other institutions devoted specially to this subject.

Panel Practitioners' Conditions.

Sir KINGSLEY WOOD asked the Minister of Health when the discussion between himself and representatives of the insurance practitioners and approved societies was to take place; and whether he proposed to make a statement to the House on the conclusion of such discussion.—Lord E. PERCY replied: The Insurance Acts Committee met representatives of the Ministry yesterday to discuss recommendations of the Panel Conference in regard to the revision of the terms of service. Further discussion will be necessary on certain points with the Insurance Consultative Council. No joint conference, such as my hon. friend suggests, is contemplated at present, and it is unlikely that any definite

decision as to the rate of remuneration will be reached before the autumn.

Mr. D. G. SOMERVILLE asked the Minister of Health the form in which the official proposals for the renewal of the panel system under the National Health Insurance Act would come before the House; and whether any such scheme would be considered in the autumn.—Lord E. PERCY replied: Any changes in the terms of service of insurance practitioners apart from the amount of the practitioner's remuneration will involve an amendment of the regulations, and any amending regulations will be laid before Parliament in accordance with the provisions of Section 65 of the National Insurance Act, 1911. My right hon. friend is not yet in a position to say when the amending regulations will be made.

Mental Deficiency Administration.

Mr. FRANK GRAY asked the Minister of Health whether he was aware that many complaints had been made in several localities of the exercise of the wide powers conferred by the Mental Deficiency Acts, 1913 to 1919, over individuals; and whether he would cause inquiry to be made into the exercise of these powers and the foundation for the complaints made.—Lord E. PERCY replied: As far as I am aware, the powers referred to are exercised with care and discretion. If the hon. Member has any specific cases in mind and will give me particulars I will ask the Board of Control to investigate them.

Diagnosis of Small-pox.

Mr. BECKER asked the Minister of Health the number of cases of small-pox notified during the first three weeks of this month; had he any information to the effect that in parts of the country small-pox had been wrongly diagnosed as chicken-pox; whether the spread of small-pox was increasing or not; and whether his department attributed this to people refusing to be vaccinated.—Lord E. PERCY replied: The figures for the week ending June 23rd are not yet available, but the number of cases of small-pox notified during the previous three weeks was 183. This figure is subject to revision in the light of information which may subsequently be received. The answer to the second part of the question is in the affirmative. As regards the third and fourth parts, my right hon. friend is advised that there has recently been an increase in the prevalence of this disease, and that the neglect of vaccination has undoubtedly contributed to its spread.

Small-pox in Gloucester.

Mr. LANSBURY asked the Minister of Health whether, seeing that two medical men practising in Gloucester, who had had before them many more cases than any other medical men in the town, had not notified a single case of small-pox, but had certified a large number of patients as suffering from chicken-pox, and seeing that the medical officer of the town did not agree with the diagnosis and report of the Ministry of Health officials, asserting that small-pox was prevalent in the town, he would order a public inquiry into the whole facts connected with this assumed outbreak of small-pox, the inquiry to be conducted by a committee of laymen with expert advisers.—Lord E. PERCY replied: My right hon. friend is satisfied that small-pox is prevalent in Gloucester, and sees no reason for a public inquiry into that point.

Tuberculous Treatment in Scotland.

Mr. WHEATLEY asked the Under Secretary to the Scottish Board of Health if it was the intention of the Board of Health to reduce the grant to local authorities in Scotland towards the cost of tuberculous treatment in 1923–24; and if he has received any protest from local authorities on the subject.—Captain ELLIOT replied: The Board have informed local authorities, with three exceptions, that they will pay the usual 50 per cent. grant on the actual expenditure included in their estimates for the year 1923–24, subject to audit of claims. In the case of the three authorities referred to, certain items of their estimates made provision for expenditure at rates much in excess of those for other comparable authorities, and the Board have intimated that they will pay grant only on an amount less than that provided in the local authority's estimate. As regards expenditure not included in the estimates for the year for which approval has been asked by local authorities, and to which the Board on the merits have no objection, the Board have intimated that grant can be paid only in so far as there are savings available. With regard to the last part of the question, the Board have received a copy of a resolution adopted at a conference of representatives of local authorities to the effect that the distribution of grant in aid of the treatment of tuberculosis should be made on the basis of actual approved expenditure, and not on estimated approved expenditure. The distribution of the grant for 1923–24 will, as I have explained, be substantially on the lines recommended in this resolution.

Deaths from Cancer.

Major MOLLOY asked the Minister of Health what proportion of deaths in the four decades, 1881–90, 1891–1900, 1901–10, 1911–20, and in the year 1921 from all causes other than violence or accident were due to cancer in those who lived to be 30 or upwards.—Mr. NEVILLE CHAMBERLAIN replied: From 1881–1910 deaths were grouped by age in five-year periods up to 25 years, and afterwards in ten-year periods, so that it is not possible to give the required particulars for ages from 30 and upwards. The following table gives the proportion for ages from 35 and upwards for the whole of the period covered by the question, and, in addition, the proportions for 1911 to 1920 and 1921 for ages from 30 and upwards.

Percentage of Total Deaths (excluding Violence) due to Cancer.

Age 35 Years and Over.		*Age 30 Years and Over.*	
1881–1890	6·6	1911–1920.. ..	12·3
1891–1900	8·5	1921	14·9
1901–1910	10·9		
1911–1920	12·4		
1921	15·3		

THURSDAY, JUNE 28TH.

MINISTRY OF HEALTH VOTE.

The House went into Committee of Supply on a Vote of £12,504,210 for the salaries and expenses of the Ministry of Health, Mr. JAMES HOPE in the chair.

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said that ever since he had taken part in public affairs, whether local or national, he had felt that improvements in the public health were of more importance to the nation than anything else. Sickness and ill-health meant that a vast army of people had to be maintained at the cost of their fellows while they were unable to work, and the withdrawal from the productive activity of the country of a large number of people who otherwise might contribute to the nation's wealth. Taking only the insured population in the year 1922, upwards of 19,500,000 weeks of work were lost from this cause alone. It was some consolation to reflect that the work that was being done by way of preventive medicine was not in vain. During the first 10 years of this century the death-rate in this country was 15·4 per 1000. In the following 10 years, including the war years, it had fallen to 14·3, not including the deaths of those who were actually killed in the war. Last year it had fallen as low as 12·8. After quoting figures to show the decrease in infantile mortality in recent years, Mr. Chamberlain said that the expectation of life among all classes of the population was steadily increasing, and a baby born to-day could reasonably expect to live 12 years longer than its grandfather. Tuberculosis and cancer were very far from being the most fatal diseases. Easily the first in fatal effects were the respiratory diseases—pneumonia, bronchitis, &c.—the high mortality from which was due to the congested conditions and polluted atmosphere of our large towns. Next to the respiratory diseases were those of the heart, and after them came the diseases of the nervous system. Cancer, which was fourth on the list, accounted for about 96 per 1000 of all deaths from all causes. He was sorry to say that this disease was increasing among our people. In 1900 cancer deaths per million of the population were 829; in 1910 they had risen to 967, and in 1921 to 1215. Two allowances must be made. The first was that methods of diagnosis were constantly improving. Then the fact that people lived longer than formerly brought a larger proportion of the population into that comparatively short span which was called the cancer age. Cancer was most prevalent between the ages of 50 and 60. He had at the Ministry of Health a Standard Medical Committee on Cancer which advised him from time to time. Researches were being undertaken by three bodies—the Cancer Research Fund, the Middlesex Hospital, and the Cancer Hospital in the Fulham-road. In addition the subject was constantly under the attention of the Medical Research Council, and in the last few weeks another body had started, the British Empire Cancer Campaign. If that new body could succeed in coöperating with the existing bodies and in forming some sort of coördinating influence between them all he would heartily welcome its existence and be glad to give it his support.

He was glad to be able to give a much more encouraging account of tuberculosis than of cancer. In 1867 the deaths from tuberculosis per million of the population were 2653; in 1887 they had fallen to 1685. In 1907 they were only 1125, and last year they were only 885 per million. Just lately two new methods of treatment had come under the notice of the Ministry of Health—the first devised by Mr. Spahlinger and the other elaborated by Prof. Dreyer of Oxford. A little while ago venereal disease was occasioning a great deal of anxiety on account of the great increase in the number of cases after the war, and arousing a great deal of controversy in the activities of two different schools of thought as to the proper method of treatment. For-

tunately the disease was fairly rapidly on the decline, and they were going back to more normal methods and figures. They might attribute a great deal of this result to the fact that they had established a number of clinics throughout the country of which there were 191 now in existence. He hoped that the number of clinics might be increased. The report of Lord Trevethin's Committee seemed at last to offer some basis upon which these two schools of thought might come together and work harmoniously in the future for the common good. He hoped that it might be possible for him to make some progress on the main lines suggested by that committee.

Small-pox, owing to the amount of vaccination that went on, was for some time almost extinct in this country. In 1917 there were only seven cases, but he was sorry that there had been a very serious revival in the prevalence of this disease. In 1922 there were upwards of 973 cases, and this year up to June 16th there had been already 955 cases. He thought it was his duty to speak plainly on this matter, and he considered that the situation was distinctly serious. Twenty years ago 75 per cent. of the children born were vaccinated, and to-day only 38 per cent. were vaccinated. There was a possibility of their being faced with an outbreak of small-pox which would not only be dangerous to health and even to life but would certainly inflict a very serious damage upon the commerce of the country. He was watching, and would continue to watch, the situation with close attention, and in the meantime he desired to emphasise as strongly as he could that the one sure protection against small-pox was vaccination, and that those who not only refused to be vaccinated themselves but gratuitously advised others to follow their example were taking upon themselves a very grave responsibility, which they might some day be called to account for at the bar of public opinion. Reverting to the question of infantile mortality, the right hon. gentleman said that he thought it might largely be taken to be the result of the infant welfare centres, of which there were now 1950 in the country. They wanted more centres, more pre-natal clinics, more free medical attendance, more health visitors, and improved practice in midwifery.

Up to the present the Voluntary Hospitals Commission had spent £425,000 out of the £500,000 voted by Parliament. Fortunately the deficits for 1921 were substantially less than had been estimated, and the deficits had now practically all been cleared off with the exception of a few cases in which the hospitals were unable to raise the equivalent amount of money to justify a grant being made. In 1922 it was believed that the deficits would prove to have been less than was anticipated. The success of what was called mass contributions had substantially increased hospital incomes. Although the ordinary expenditure might increase still further in the future, with the revival of trade and the reduction of taxation the resources of the hospitals might be expected to increase, and they need not take a gloomy or despairing view of the future. More beds were required to accommodate patients undergoing operations or some specialised treatment, and the result of the natural increase in demand, coupled with the fact that there had been no increase in the supply, had been that every hospital now had a terrible waiting list. Unless the voluntary system was able to provide for the inevitable growth in the number of beds required and to bear the increased burden of maintenance necessitated by that, the system could not be said to be standing on safe ground. While the outlook was still serious, he should consider it a mistake to come to any hasty conclusion upon it, because the voluntary system had shown such remarkable vitality and persistency in extraordinarily trying times. One other way in which some relief could be given to the hospitals was through the Poor-law infirmaries. In conclusion, Mr. Chamberlain pointed out that the estimates of his department had been reduced in two years by nearly £4,750,000. He thought that they had almost got to the end of reduction. It would really be impossible to make further savings without trenching on services which in the public interests ought not to be curtailed.

Sir KINGSLEY WOOD said some £8,250,000 per annum had been paid to the 12,000 odd doctors on the panel under the Insurance Acts. Since the Act had been put into force £53,000,000 had been paid to them. He believed, and he had no doubt the Minister believed, that in very many respects the insurance medical service could be very greatly improved. One of the great defects was that only about half the general practitioners of the country had undertaken service under the Act. Large numbers of doctors might have big private practices, but he believed that there were also a very large number who had professional objections to serving under this administration, and they would never get a much more perfect service until they were able to attract a good many more medical men and induce them to take service. He made no general indictment against the profession, but they knew that there was a great body of complaints about the present service. There were far too many patients on doctors' panel lists. There were some 11 per cent. of the panel practitioners who had between 2000 and 3000 patients and 3 per cent. who had over 3000 patients. That called for immediate attention and remedy. When most of these medical men had a private practice as well, how on earth they could give proper attention to either practice he could not understand. His suggestion was that insured persons should be able to change their doctor at any time after reasonable notice. He did not think that the insured patient was getting the same or as good treatment as the private patient, and yet he was certainly entitled to it. The trade union which looked after the interests of the medical men in this country had issued a document counselling the members of their Association as to what they were to do if the Minister of Health did not accede to their demands as far as remuneration was concerned. That document, as he understood it, said that in certain events unless the Minister came to terms with the medical profession they would decline to carry on and engage in the service of the Act. He hoped that his right hon. friend would take no notice of such tactics, because he believed he would have behind him the whole of the country in resisting that kind of method from a body of men from whom they expected better things.

Sir GEORGE BERRY emphasised the importance of milk sterilisation, which he said was compulsory in some countries. He agreed that vaccination was essential, and that it was criminal to neglect it. He would like to see the voluntary system continued. It attracted the best class of medical men. He had always been an opponent of the panel system, not so much on account of the system itself as because of the way it was worked.

Dr. WATTS said that in regard to the small-pox epidemic in Gloucester and certain difficulties of diagnosis he thought that was one of the strongest arguments in favour of vaccination. In his younger days no medical man would have mistaken chicken-pox for small-pox. Labour Members and others made a great point of improved sanitation in regard to the decrease in small-pox. To a certain extent and degree that was perfectly true, but it was not the whole story. Scarlet fever, measles, and small-pox had been subjected to exactly the same sanitary conditions; but whereas the first two were as prevalent to-day as they were formerly, small-pox up to the last year or two had practically died out in this country. He was not asking for fresh legislation, but merely that the law as it existed should be carried into effect. Dr. Watts referred to the danger that within a very few weeks Mr. Spahlinger's establishment and his apparatus would be sold. He wished that rather than spend hundreds of thousands a year on sanatoria the Minister of Health would devote a few thousand pounds to helping Mr. Spahlinger. As regarded the panel service, while he had been a bitter opponent of the system, and he granted that in the early days the work was bad, to-day he was of opinion that the work was cheerfully, well, and efficiently done. There might be regrettable cases here and there—there must be black sheep everywhere—but on the whole he thought the practitioners were giving good service.

Major MALLOY said as a doctor who had never had anything to do with national insurance, as far as his experience went, and it was a pretty large one, the work done by the panel doctors was, as a rule, extremely good, and vastly superior to anything that obtained under the old dispensation. The hon. gentleman quoted a series of statistics to show the grave rise in the number of deaths from cancer, and urged the importance of cancer research. There was a great deal of danger in relying upon the generosity of the charitable and the frightened, because that was a precarious source of income at any time. Most of the men who did the best work in the laboratories throughout the country did not get as good wages as a first-rate chauffeur. The money went in the expense of apparatus and in costly experiments which had to be continued over long periods. He thought the Ministry of Health should not only be the mainspring but the master of any efforts made in this direction.

Mr. NEVILLE CHAMBERLAIN, replying to the debate, said that he agreed that the panel system, whatever might have been its defects and faults, had done a very valuable service, and had done much to raise the standard of medical attendance among the poorer classes of the people. He thought it had come to stay. At the same time every effort would be made to improve the service. In view of the fact that the present arrangement for the remuneration of the doctors came to an end in December, 1924, it was necessary before settling new terms to discuss with the doctors the arrangements of the service. A certain amount of discussion had taken place already. One subject was the limitation of the panel. Another, that there should be no private fees paid for services coming within the scope of the contract. Another was greater freedom in the choice of doctors than at present, and one more, of considerable importance, was that they should be able to secure that proper records were kept of each case. It was very important that this should be done, so that there should be in existence some records of the

medical history of the patient. And that also would be valuable when the patient was changing his medical practitioner. When they had some agreement on various points, then they would have to go into the question of remuneration, and he could give his hon. friends the assurance that this matter would be discussed in the House sooner or later, very probably in the course of the autumn session, because he thought it was most likely that further legislation would be necessary in order to put into operation the new arrangement to which they might come. As regarded the Spahlinger treatment, he understood that a movement was going on for the raising of a sum of money privately which, if successful—as he had some reason to hope it might be—would enable Mr. Spahlinger to produce his remedies in sufficient quantities to be available for experiment, and he would then send a supply over here, where they would be handed to the Ministry for examination. The process discovered by Dr. Dreyer, as to which they had much more complete information, was very encouraging in its results. It was the policy, however, of the Ministry to test out any remedy submitted to them which seemed at all hopeful. As to the new School of Hygiene, plans had been prepared and a site chosen near the University buildings. The school would be affiliated to the University of London, but it would be governed by a body for which a charter of incorporation was to be sought, and in the meantime the work would be carried on by a transitional executive committee with the concurrence of the Rockefeller Institute. That committee, of which he was ex-officio chairman, had to consider the possible amalgamation or coöperation with similar institutions; it would go on with the preparation of plans and probably begin the building of the institution itself. But, most important of all, it had to proceed with the appointment of a director. They hoped to be able to make an appointment before very long. With regard to the recommendations of the Cobb Committee in connexion with lunacy, there were two lines of progress which were engaging his attention. One was the prosecution of research into all forms of mental disease, which had been taken up with considerable enthusiasm by a number of local authorities; the other line was the treatment of incipient cases without certification. The Mental Treatment Bill attempted to make some progress in that direction.

The Vote was agreed to.

Pensions Disability Committee.

Mr. PIELOU asked the Minister of Pensions whether he could inform the House the composition of his Pensions Disability Committee; whether this Committee's findings had ever been published; and, if not, whether he would undertake to publish the result of the work of this Committee, especially that part that concerned the recommendations made to the doctors on the special boards in connexion with the examination of pensions for final awards.—Major TRYON replied: The Disability Committee is composed of the Presidents of the Royal Colleges of Physicians and Surgeons and of other distinguished physicians and surgeons, together with the chief medical officers of my department. The recommendations of the Committee with regard to the medical considerations which should be taken into account in determining the assessment of special classes of disability, in connexion both with conditional and final awards, are issued from time to time to all medical boards and medical officers concerned in the assessment of pensions. It would not be to the public advantage, in my opinion, to make a general publication of these recommendations of the Committee, which are of a purely technical character and deal with such questions as symptoms and diagnosis.

Changes in Pensions Headquarters in the North.

Mr. ALBERT ALEXANDER asked the Minister of Pensions whether it was proposed to amalgamate the Yorkshire regional headquarters of the Ministry with the northern regional headquarters, and to close the regional headquarters at Leeds; and, if so, what were the reasons for the proposed change. Similar questions were asked by Mr. F. JOWETT and Sir J. BUTCHER.—Major TRYON replied: The amalgamation of the northern and Yorkshire regions has been decided upon as a measure of administrative reform. I wish to emphasise the fact that the pensioners in the neighbourhood of Leeds will not be adversely affected in any way by the change, as an area office and medical boards will continue to be maintained in that city. I should not be justified in maintaining the two regions as separate units in view of the administrative economy and advantages which will result. The total staff in the Yorkshire regional headquarters, which numbers less than 300, has shown a decrease of 75 during the past six months, and will continue to decrease. It is proposed to effect the transfer gradually in the autumn, and I hope that it will be possible to house the two staffs in the existing premises at Newcastle without removing the area office. I understand that the Office of Works have other premises available for housing the income-tax office.

Nationality of Pension Doctors.

Mr. BECKER asked the Minister of Pensions if, seeing that Scotland, Wales, and Ireland insisted that doctors appointed by the Ministry were of their own nationality, he would see that, in future, the doctors appointed in England should be English; and would he give preference in selecting these medical men to ex-Service doctors.—Major TRYON replied: The assumption on which this question is based is not correct. In making these appointments the first consideration is efficiency and, subject to that, it is and always has been the policy of the Ministry to give preference to those who have served. I may add that 94 per cent. of the whole-time medical officers employed by my department have served.

Medical Examinations in Nottingham.

Mr. HAYDAY asked the Minister of Pensions where it was proposed to medically examine the aged dependents of deceased Service men who were resident in Nottingham and its vicinity; and whether arrangements would be made for them to be examined at their own homes or in proximity thereto.—Major TRYON replied: The existing arrangements, which will be continued, provide for these examinations to be made at area headquarters, Nottingham, or at the homes of the applicants when they are not in a condition to travel.

Pitch Cancer.

Mr. DAVID WILLIAMS asked the President of the Board of Trade the number of men certified as suffering from pitch cancer by those engaged in the manufacture of pitch and patent fuel during the past five years; how many had died of this disease during the same period; and how many employed in those industries had died in the same period from other forms of cancer; and whether, in view of the growth of this disease, he would make it obligatory on the manufacturers of these commodities to use mechanical appliances in the handling of pitch wherever possible.—Mr. BRIDGEMAN (Home Secretary) replied: The numbers of men reported to the Factory Department as suffering from this disease during the five years 1918 to 1922 were as follows:—In 1918, 23; in 1919, 10; in 1920, 25; in 1921, 18; and in 1922, 15. No fatal cases were reported in 1918 to 1920; two were reported in 1921, and one in 1922. Before 1920 the disease was not compulsorily notifiable under the Factory Act, but cases were notified under a voluntary arrangement. As the hon. Member will observe, the figures do not indicate any growth in the incidence of this disease. I regret that no information is available to show the number of deaths in these industries during the period in question from other forms of cancer. As regards mechanical appliances, I understand that these are generally used when practicable, but that they can only be used in a few operations. I am advised that the most effective precautions against this disease are great attention to personal cleanliness and periodic medical examination, and that facilities to enable the worker to take these precautions have been arranged for at the instance of the Factory Department at all the works concerned.

MONDAY, JULY 2ND.

Panel Doctors' Certificates.

Mr. LOWTH asked the Minister of Health whether he had received any communications from Poor-law guardians or other bodies or persons respecting the acceptance or otherwise of panel doctors' certificates for Poor-law relief cases; and whether he would issue such instructions to Poor-law authorities that panel doctors' certificates might be accepted.—Mr. NEVILLE CHAMBERLAIN replied: The reply to the first part of the question is in the negative, and, as at present advised, I see no occasion for the revision of the existing regulations on this subject.

Cancer Mortality.

Commander OLIVER LOCKER-LAMPSON asked the Minister of Health if, having regard to the increasing prevalence of and mortality from cancer in the British Isles, he would consider the advisability of initiating in every local area under his control special machinery to investigate and, if possible, discover its cause and cure, the expenses of such machinery to be defrayed by a local rate.—Mr. NEVILLE CHAMBERLAIN replied: I am giving attention to the increasing prevalence of and mortality from cancer and the action which central or local public health authorities may be able to take in the investigation of the cause and cure of this disease. As at present advised, however, I do not consider that the establishment in every area of special machinery financed out of local rates as suggested in the question would be desirable.

Arm-to-Arm Vaccination.

Mr. RHYS DAVIES asked the Minister of Health whether he was aware that, at the present time, many medical practitioners still employed the arm-to-arm method of vaccination in private practice; and whether, in view of the serious risks attending that practice, he would consider the

desirability of making representations to the medical profession on the matter.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the negative. My information is that comparatively few medical practitioners now employ this method of vaccination, and I scarcely think it necessary to make representations to the medical profession on the matter.

Legacies to Hospitals.

The Finance Bill was considered on Report.

Viscount EDNAM moved a new clause providing that legacy and succession duty should not be leviable or testimentary bequests made to hospitals carried on in the public interest. He said that while the ordinary income of the hospitals had increased since 1913 by 67 per cent., ordinary expenditure had increased by 137 per cent. He was informed by the British Hospitals Association and the King Edward's Fund that the average cost to the Exchequer of the concession would not exceed £130,000. If the voluntary system broke down the whole of this extra expense would be thrown upon the State.

Major CADOGAN seconded. He said that so long as the voluntary system was able to increase the amount of money raised on behalf of the hospitals the House ought to encourage the system, which not only saved the tax-payer something between £3,000,000 and £1,000,000 a year, but undoubtedly functioned far more efficiently than any State agency could possibly do.

Sir T. INSKIP (Solicitor-General), replying to the debate, said that at the most sanguine estimate a sum of £200,000 was involved and that was spread over 950 hospitals. It was not because the Government could not afford this sum that they were unable to grant this concession, but mainly because they thought it was impossible to make distinctions between one charity and another, and that if the hospitals did work for the State, the proper course was for a grant to be made from State funds.

Viscount EDNAM said that the hospital authorities for whom he spoke did not wish to divide against the Government, and therefore he asked leave to withdraw his new clause.

The Labour party opposed the withdrawal of the clause, which was negatived on a division by 243 votes to 153—majority 90.

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POSITION PAGES.—Terms on application.

A COMFORT FOR INVALIDS.—The *Preston Guardian* for June 23rd contains an illustration and description of a combination of chairs and simple accessories which should prove useful to the invalid and to the infirm. The combination has been devised by Sir Charles Brown, F.R.C.S., F.R.C.P., who is nearing 87 years of age and has been compelled to sleep downstairs for the past 18 months. The basis of the arrangement is an American rocking chair, which can be fixed in either the extreme upright or horizontal position by means of a large wedge. The companion chair, which can be used in the day time as an ordinary chair, extends the seat of the rocking chair, and with the aid of cushions, bed-clothes, and a hot-water bottle, a comfortable bed can be devised. An arrangement of cords allows the invalid to arrange the hot-water bottle according to his wishes. A simple table is provided for taking meals.

Appointments.

FELDMAN, W. M., M.D. Lond., F.R.S. Edin., has been appointed Physician to St. Mary's Hospital for Women and Children, Plaistow.

KEITH, F. L., M.D., Ch.B. Aberd., D.P.H., Medical Officer of Health for St. Pancras.

Manchester Royal Infirmary: TWINING, E. W., M.R.C.S., L.R.C.P. Lond., Radiological Registrar; and NEWELL, R. L., M.D. Manch., F.R.C.S. Eng., Assistant Surgical Officer.

Vacancies.

For further information refer to the advertisement columns.

Barbados General Hospital.—Jun. Res. S. £250.
Barnstaple, North Devon Infirmary.—H.S. £170.
Belfast, Queen's University.—Lecturer in Pharmacology. £450.
Belgrave Hospital for Children, Clapham-road, S.W.—Hon. Radiologist. 50 guineas.
Bristol Mental Hospital.—M.O. and Pathologist. £400.
Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow, near Chester.—Med. Supt. £800.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Physician.
Dreadnought Hospital, Greenwich, S.E.—H.P. £150.
East African Medical Service.—M.O. £600.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Part-time Pathologist. £400.
East-street Welfare Centre, Walworth, S.E.—Hon. Clin. Assts. Hon. P. for Infants.
Gloucester City.—M.O.H. £1000.
Guy's Hospital Dental School.—Senior Dental O. and Clin. Tutor. £300.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P.
Hove Hospital.—Res. M.O. £200.
King's College Hospital, Denmark Hill, S.E.—Second Asst. Radiologist. £300.
London County Mental Hospital Service.—Seventh Asst. M.O. £440.
Manchester Royal Infirmary.—Asst. Director to Clin. Lab. £350.
Miller General Hospital for South-East London, Greenwich-road, S.E.—H.P. £150.
Northampton General Hospital.—Two H.S.'s. Each £200.
Preston, Lancs, County Mental Hospital, Whittingham.—Locum Tenens M.O. £8 8s. per week.
Queen Mary's Hospital for the East End, E.—Hon. M.O. for Radio-Electro-Therapeutic Dept.
Royal Dental Hospital, London.—Hon. Asst. Dental Surg.
Royal Naval Medical Service.—Surgeon-Lieutenants.
Salford Union Infirmary, Hope, Pendleton, near Manchester.—Third and Fourth Asst. Res. M.O.'s. Each £200.
Sheffield Royal Hospital.—Cas. O. Hon. Surg. Asst. Cas. O.
Stoke-on-Trent County Borough.—Asst. M.O. £500.
West African Medical Service.—M.O. £660.
Willesden Urban District Council.—Two Asst. M.O.'s. £500 and £600 respectively.
Wrexham Infirmary.—H.S. £150.

Births, Marriages, and Deaths.

BIRTHS.

ALEXANDER.—On June 29th, at Cade House, Riverhead, Sevenoaks, the wife of J. Finlay Alexander, M.A., M.D. Camb., of a daughter.

KERR.—On June 27th, at Baghdad, Iraq, the wife of J. Fraser Kerr, L.R.C.P. & S. Edin., Civil Surgeon, Hillah, Iraq, of a daughter. (By cable.)

SPERO.—On June 26th, at Connaught-square, W., the wife of Dr. G. E. Spero, of a daughter.

MARRIAGES.

DONKIN—BATES.—On June 27th, at St. James', Paddington, Sir Bryan Donkin, M.D., F.R.C.P., of London, to Marie Louise, widow of Isaac Bates, of Belfast, and daughter of the late William Preston, of Wilmington, North Carolina, U.S.A.

HALE—COLES.—On June 26th, at Watford Parish Church, John Hale, M.A., M.B. Camb., to Elsie Ledbrooke, daughter of Mr. and Mrs. Walter S. Coles, of Oxhey View, Watford, and Standean, Sussex.

DEATHS.

LIDDON.—On June 26th, at Silver-street House, Taunton, Edward Liddon, M.D., aged 92.

PROUDFOOT.—On June 21st, at St. Clair-street, Kirkcaldy, Scotland, suddenly, Robert Butter Proudfoot, M.D., in his 65th year.

RATTRAY.—On July 2nd, suddenly, at Pemberton-gardens, Upper Holloway, Patrick Whyte Rattray, F.R.C.S., in his 64th year.

WHITTING.—On June 25th, Charles Edward Whitting, M.A., M.B. Camb., of Buxton, aged 25 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

TELEOLOGY AND EVOLUTION.[1]

BY SIR ARTHUR KEITH, M.D. ABERD., F.R.C.S. ENG., F.R.S.,
CONSERVATOR OF THE MUSEUM AND HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

TELEOLOGY, a word so familiar to the generation which read the works of Archdeacon Paley, has disappeared from the vocabulary of men of science. The things for which the word stood, the numerous contrivances to be seen in the human body, still remain; indeed, as we get to know the human body better its contrivances become not less, but more wonderful. Most people believed that Darwin had explained how such contrivances had arisen, but Huxley, although convinced that Darwin's main thesis was true, held a peculiar opinion as to the exact manner in which useful contrivances or adaptations came into existence.

The Doctrine of Evolutionary Predestination.

Any opinion held by Huxley regarding the structure of man was of real value. He had been a student of human anatomy at two periods of his career—first when studying medicine at Charing Cross Hospital, from 1842 to 1846, and then later, during the crisis raised by Darwin's "Origin" in the sixties of last century, he again made the evolution and nature of man his main theme of interest. In 1876, when he was in his fifty-first year and at the zenith of his intellectual ability, he had to lecture in Glasgow, and selected the hand as the theme of his discourse—a structure which Sir Charles Bell made the subject of a Bridgewater treatise. The old teleologists regarded the contrivances of the hand as of supernatural origin. Huxley admitted the excellency of its contrivances, but held they were neither the result of supernatural interposition nor were they functionally acquired characters. He held there was no evidence to support the belief that a child's hand could be influenced in size or action by hard manual labour on the part of its parents. "To be a teleologist" he said, "and yet accept evolution, it is only necessary to suppose that the original plan was sketched out and that the purpose was foreshadowed in the molecular arrangements out of which animals have come." Here we find Huxley, the sanest and most gifted of men, preaching a doctrine of evolutionary predestination. For if we apply this abstract declaration to the hand, foot, or brain of man, it simply means that in Huxley's opinion the designs which have blossomed into existence during the evolution of our brains, feet, and hands, were already germinating in the corresponding parts of man's simian ancestor.

Strange as it may seem to laymen, this doctrine of an evolutionary predestination is held by most of the men who have traced the history of animals through long geological ages by the study of fossil remains. The evidence which accumulates relating to the origin of man's most outstanding features favours this view. Many of man's newest structural acquisitions represent phases which are transitional in the young of anthropoid apes. The hairlessness of the skin of mankind, the fairness of the complexion of Europeans, man's relatively big head poised on a small neck, a large brain, a small face and jaws, a human proportion in the segments of the limbs and in the joints of the fingers and toes are acquisitions of this kind. New human characters are foreshadowed in developmental stages passed through by apes. And that these developmental characters are new and have never been perpetuated into an adult stage until man's evolution took place, there can be no doubt. All the fossil primates of which we have any knowledge are marked, not by these fœtal characters, but by features of a reverse kind. Development is a double process—old ancestral features are recalled and new features are introduced. Business men know that capital is necessary for the development of a new and large undertaking. Nature made this discovery long ago; she places sufficient capital at the disposal of the fœtus of man and anthropoid to carry them through the nine months which are spent in the womb, and it is during this latent, preparatory period that new designs are introduced and elaborated.

If Huxley is right, then man's destinies lie hid in the potentialities of his germ-plasm. There may be some consolation in knowing that there is nothing we can say or do, eat or drink, which will alter our evolutionary destiny—except in so far as we may voluntarily select and favour certain types of man as breeders do. If we cannot compel Nature to produce the type of man we may be in search of, we can, if we are so minded, favour one of the many types which Nature tends to produce.

Human Life a Continual Experiment.

But our main consolation would lie in this: we are attempting in these passing centuries one of the great experiments of human history. Perhaps the greatest revolution which has affected human life and evolution followed the discovery of the uses of fire and its application to the preparation of human food. The human body had then its nourishment presented to it in a state which no animal body had experienced before. In these modern days the conditions of human life have been again revolutionised; we abide in cities and live in houses; we work in heated factories, we breathe air laden with fumes of diverse kinds, we eat artificially prepared and concentrated foods, many of a novel kind; we drink beverages containing alkaloids which were unknown to our ancestors. We cannot claim that our bodies are escaping certain effects produced by modern methods of life. Nature has not made our bodies fool-proof. It would be a relief to know that the source from which the new generations of mankind issue was beyond any source of permanent contamination. But is it?

Transmission of Defect.

Darwin records the case of a cow in which the eye was injured when with calf. The calf was born with the corresponding eye small and blind. An identical case has been recently recorded of a mare; one eye was injured when she was pregnant and the foal was born with the corresponding eye small and blind. These are apparently not coincidences, for certain well-known experiments, which have been carried out lately by Guyer and Smith, throw light on how such an injury is transmitted. They injected rabbits with a substance which has a selective and destructive action on the lens of the eye; many of the progeny of such rabbits had small and defective eyes. They found that the defect thus produced was hereditary; it could be handed on by the male alone. Somehow the actual germ-plasm of these rabbits had been reached, and that element which is concerned with the formation of the eye had been permanently damaged. Professor Stockard induced permanent changes in the germ-plasm of guinea-pigs by treating one generation of them to extreme and prolonged doses of alcohol. Dr. J. G. Adami has summed up the evidence on this matter in his "Medical Contributions to the Study of Evolution."

Although ordinary injuries, such as the amputation of a limb or finger, the removal of the foreskin, the rupture of the hymen, the docking of horses, dogs, or sheep, produce no apparent effect on the progeny, yet it is clear that certain substances can reach and injure the germ-plasm in such a way as to induce permanent localised defects in the progeny. It is possible that certain defects—such as contracted palate, deformed jaws, the narrowing and margination of the nasal aperture, the tendency to flat-foot, and torsion of the spine, which are so common in present-day Englishmen and were so rare in their prehistoric ancestors, are due to toxic or other substances now circulating in our bodies. Is the prevalence of shortsightedness in modern civilised populations to be ascribed to such a cause? All one can say now of these defects is that they are of recent origin, and represent features which are new to the human body. No doubt the little use made by modern people of their teeth and jaws have something to do with the appearance of these changes in their faces, but disuse alone cannot explain them.

It is one thing to produce a definite and permanent lesion of the germ-plasm; it is quite another thing to influence the germ-plasm in such a way as to make it produce a useful or contrived modification of the eye, or of the hand, or of the foot. Take the human teeth, for example. Each upper tooth fits against, or should fit against, a counterpart in the lower jaw. Yet the crowns of the teeth, the articulating or opposing dental surfaces, are perfectly formed long before they come into use. When they do come into use they become worn and deformed, yet such abrasion leads to no change in the shape of the teeth of the progeny. A study of the teeth of man and apes shows that there is a mechanism which controls the kind of pattern and relative size and shape of all the teeth. When a dentition is undergoing evolutionary strengthening, or if it is undergoing a reduction, each tooth suffers a change which affects the whole dental series in an orderly manner. The machinery which regulates the formation and evolution of teeth is one which cannot be influenced by any act or habit on the part of the parent. As Huxley declared, there is no evidence to lead us to believe that purposive modifications of structure can be produced by use. What, then, is the mechanism of their production?

Complexity of Mechanism of Growth.

Since Darwin and Huxley wrote, our conception of the machinery which controls the development of the embryo—and the machinery of development is also the machinery of evolution—has undergone a great extension. Let us take the development of that highly teleological organ—the

[1] An abstract of the Huxley Memorial Lecture given at Charing Cross Hospital Medical School, June 27th, 1923. The lecture will be published in full in a future number of Nature.

eye—to serve as an example. A critic of Darwin said he would as soon believe that a handful of words falling at random on a table could arrange themselves in the form of a perfect poem as that the parts of the eye had been assembled by chance. In 1903 Dr. W. H. Lewis commenced a series of experiments on developing tadpoles of a particular species, and found that when the optic cup, which forms the retina, grows out from the brain it comes against the overlying ectoderm or skin of the embryo. When the optic cup makes this contact the overlying ectoderm begins to form a lens. By transplanting the optic cup, Dr. Lewis found it had the power to compel the overlying ectoderm of any part to form a lens. Embryologists, by adopting the methods used by bacteriologists, have been able to demonstrate that some tissues of the embryo exercise controlling influences over other tissues. The pattern in which epithelial cells grow is altered when cells of a connective tissue nature are added. It is clear that we are now on the threshold of a new field of knowledge—one which presents us with a vista of an infinite complexity of mechanisms which regulate development and growth. The manner in which new and useful adaptations come into existence, or are evolved, will become apparent as we get to know the nature of such mechanisms.

We have known for many years that developing nerve cells have the power to send out processes which effect distant contacts with exceeding accuracy. But the knowledge that groups of neuroblasts have a power of migrating is new; and is, to a large extent, the result of researches carried out by Dr. Kappers of Amsterdam. These migrations affect groups of nerve cells concerned in a common function; such a group moves towards a site which is advantageous for the purpose it is to serve in the mechanism of the central nervous system. A change in position of this kind may be described as purposive. What influence propels or attracts these nerve groups or centres towards new sites we do not know, but the power and inclination to migrate during embryological stages are clearly part of the machinery of the evolution of the brain. The peculiar adaptational mechanisms of man's body are best studied in connexion with the development of his muscles. The musculature of the face and of expression of the higher primates represents a graduated series. The degree to which the facial muscles of man are differentiated is but the culminating phase of a series of advancing stages. Differentiation of the muscles of expression keeps time with the elaboration of the brain. The bud or embryonic nucleus which gives rise to the muscles of the face is formed locally below the ear from the substance of the hyoid arch. From this sub-auricular point the embryonic muscle cells spread outwards or migrate into all parts of the face, head, and neck, each group reaching and arranging themselves in their proper stations. Clearly the migratory power of young muscle cells—whatever be the nature of the influence which controls them—is part of the machinery of adaptation and evolution. The latissimus dorsi is another muscle which illustrates the migratory power of embryonic muscle cells; in this case they migrate from the neck to the loins.

The power of apparent automatic action seen in all kinds of cells in the early development of embryonic tissues is lost as fœtal stages of growth are reached. Certain wandering cells, like leucocytes, retain this archaic property of automatism. Bone cells, too, retain a high degree of adaptability to new conditions. How they react so as to buttress a bending bone is well known. But bone cells, and also cartilage cells, when they proceed to lay down the outlines of bones and joints, must be coördinated in their action to an exceedingly fine degree. For when they have completed their work, as in the bones of the hand, a harmoniously working contrivance has been produced. The properties of embryonic bone and cartilage cells constitute part of the machinery of evolution.

It is when we seek for the evolutionary machinery which has given rise to such a delicately balanced mechanism as is seen in the human spine that we realise how complex such a machinery must be. The bone cells which are laying down the levers attached to each vertebra, the muscle cells arranging themselves to act on these levers, the nerve cells grouping themselves in the spinal cord, and in the brain in order to coördinate the action of the vertebral muscle, are all working towards a common, harmonious end—the maintenance of the human spine in the walking posture. Clearly any adaptational change must affect every one of the millions of diverse units concerned in this functional result. That the human spine has been evolved there can be no doubt, but where is the machinery which transformed the ape's spine into that of man?

The Theory of Hormones.

I know of only one theory which assists one to explain such evolutionary occurrences, and that is the theory of hormones as propounded by Starling in 1905. He was in no doubt as to the nature of the discovery he had made. He clearly realised that hormones formed the basis of all evolutionary progress; hormones are the means by which social life amongst the oldest and simplest of unicellular organisms is rendered possible; it is an elaboration of this system of hormonic intercommunication which makes a colony of sponge zooids possible. In the assemblage of cells which constitute the body of the human embryo we see a colony apparently governed by a system of hormones—automatic in its constitution, yet so involved and intricate that it will take centuries of research to unravel the manner of its working. The key to evolution is a knowledge of how one group of embryonic cells influences and compels another group to produce a functional result. The means used are chemical missives or hormones.

The hormone system of government—like the nervous system, which is a structural extension of the older hormone mode of government—is founded on a reflex basis. Everyone knows that, if the muscular system of a man be exercised or trained, all the other systems of his body—his bones, lungs, heart, arteries, organs of digestion also undergo a responsive growth. We cannot explain such a response unless we postulate a hormone system—one which supposes that active muscles throw out missives, and that these missives evoke a reflex growth response in structures like the bones, heart, and lungs, which are accessory in action to the muscles. Acromegaly is a morbid manifestation or disorder of the mechanism which brings about the adaptational growth-response of exercise and of training. In acromegaly we find that the pituitary gland is always involved. This gland is apparently one of the chief coördinating centres—a sort of hormone brain—of the archaic coördinating system. Missives issuing from contracting muscles evoke reflexly from the pituitary certain substances which, passing into the circulation, act on accessory structures, such as the heart, lungs, and bones.

A specimen in the Museum of Charing Cross Hospital throws a clear light on the growth-regulating machinery of the human body. It is the skull of a boy who died after an operation to arrest the growth of a tumour-like swelling on the right side of his face. As may be seen from the specimen, the over-growth is most sharply and definitely limited to one functional system of the face and head—that which is concerned in mastication. On one side the teeth, jaws, and the bony struts which support the jaws, all the parts which give support to, or are acted on, by the muscles of mastication, are markedly overgrown. The condition was congenital. We cannot explain such manifestations—for the case cited is by no means unique—unless we suppose that the growth mechanisms which regulate the assembling and deploying of cells in the embryo is constituted on a functional basis. Structures concerned in a common function are correlated by a common growth mechanism.

Automatic Properties Retained by Embryonic Cells.

John Hunter gave utterance to a great truth when he said that there remained in our vascular and bony tissues the automatic properties to be seen in the lowest forms of organised life, such as the hydra. In the formative period of the human embryo—in the phase when adaptational contrivances are being worked out in the heart, brain, bone, and muscle—the embryonic cells still retain many of the automatic properties of primitive unicellular organisms. Herbert Spencer was also right when he said that if we would understand the evolution of government and adaptation in the developing animal body, such as that of man, we would do well to study first the evolution of government in a people rising from barbarism to civilisation. In the earlier stages of the evolution of human society we see that the machinery of government is represented by the automatic working of a herd-instinct—an instinct which tends to work for the good of the community. The instinct is biased in the direction of producing functional or effective results. We have to study what in our ignorance we must call the herd-instincts of that vast community which makes up the body of a human embryo, if we would understand how the structural contrivances of the human body have been evolved. I, for one, believe with Huxley that the government which rules within the body of the embryo proceeds uninfluenced by the occurrences which affect the body of the adult. Man has come by his great gifts—his brain, his upright posture, his nimble hand—not by any effort of his own; he has fallen heir to a fortune for which neither he nor his ancestors have laboured. The human body is the vehicle of a colossal and absorbing evolutionary experiment.

HEALTH CONDITIONS IN SOMALILAND.

THE medical report for 1921 shows that during the year 4492 cases of tropical ulcers were recorded, as compared with 4654 in 1920, and cases of scurvy fell from 55 to 22. Of malaria 145 cases were reported, as against 257 in the previous year. The subtertian is the commonest type identified. A steady decline in malaria can be noted year

by year. There were 113 cases of relapsing fever, compared with 64 in 1920. The distinct form of this fever noted in a previous report as confined to Burao, and apparently carried by the bed-bug, has died out. There were recorded 32 cases of small-pox (all contracted outside the Protectorate), 82 of influenza, 132 of dysentery, 719 of syphilis, and 406 of gonorrhœa. There were 186 cases of tuberculosis with 21 deaths, as against 263 cases with 24 deaths in 1920. The decrease in poverty amongst the natives due to peaceful conditions and good seasons probably accounts for the decline in this disease. The health of European officials shows a considerable improvement. Only 14 Europeans were placed on the sick list (a percentage of 1·1 to the average number resident), and these cases all occurred in Berbera. The total number of patients admitted to hospitals was 1262, as against 1998 in 1920, whilst the out-patients numbered 19,119 as compared with 17,145.

HEALTH OF GOVERNMENT OFFICIALS IN WEST AFRICA.

THE Colonial Office, in a report issued on June 14th (obtainable from the Crown Agents for the Colonies, 4, Millbank, London, S.W. 1. Price 6*d*.) draws attention to the continued improvement in the general standard of health among non-native Government officials in West Africa. So far no adverse effects appear to have resulted from the longer tours of service under the new regulations. The number invalided out of the service in 1922 was equivalent to a rate of 20·8 per 1000 as compared with 16·6 in 1921; in spite of this increase, the rate was lower than that for any year prior to 1921, with the exception of 1917, when it was 20·5. On the other hand, the death-rate last year fell to 8·0 per 1000, a decrease by one-third on the rate for 1921, and the lowest on record. The decrease was particularly marked in the Gold Coast, where the rate per 1000 was 10·5 in 1922 as compared with 20·0 in 1921, and in Nigeria, where it was 6·9 as compared with 8·4. The average number of non-native officials in service during 1922 was 3220—viz., 58 in Gambia, 206 in Sierra Leone, 946 in the Gold Coast, and 2010 in Nigeria.

The West African Medical Service forms a separate branch of the Colonial Medical Service, and details as to appointments, leave and passage, private practice, pensions and gratuities, and instruction in tropical medicine, as published periodically by the Colonial Office, appear annually in the Students' Number of THE LANCET.

CHILDREN'S COUNTRY HOLIDAYS FUND.

To the Editor of THE LANCET.

SIR,—As chairman of the London County Council, and on behalf of the children of London, I appeal for support for the Children's Country Holidays Fund. Through the medium of the fund many of our elementary school-children are enabled to benefit both physically and mentally by a fortnight's holiday in the country. It is not necessary to dwell upon the importance of the fund, but I feel that it would be a real danger if, owing to the falling off in the subscriptions, the number of children sent to the country were restricted. For the year 1923, owing to the financial position of the fund, it has been necessary to estimate for about 4000 fewer children than were sent away last year. This is the ground of my appeal, and whilst appreciating the number of calls which must be made upon the generosity of those who support the fund, I feel sure that there need be no children disappointed of their summer holiday if those to whom the objects of the fund commend themselves will assist according to their ability. Donations should be made payable to the Children's Country Holidays Fund, and should be sent to the secretary at 18, Buckingham-street, Strand, W.C. 2.

I am, Sir, yours faithfully,

HENRY C. GOOCH,

June 29th, 1923. Chairman of the London County Council.

PROFESSIONAL AND BUSINESS WOMEN'S HOSPITAL LEAGUE.

THIS friendly society, whose registered office is at 195–197, Edgware-road, London, W. 2, was founded in 1913 to make provision in severe sickness for women who earn their living by professional or business work. By means of contracts with certain hospitals arrangements are made for beds in private wards to be available for members of the League who live near London, provincial members who are unable to come to town for treatment being aided by a money grant. The annual subscription for ordinary members is 5*s*. The League is now in a flourishing condition, having more than doubled its membership during the past year.

It has been found necessary to limit the age of those joining the League as new ordinary members to 55; on the other hand, a class of student members has been constituted. A new feature of the League's activities is an arrangement whereby a firm of surgical instrument makers allows to members of the League a considerable discount off surgical appliances.

PEOPLE'S LEAGUE OF HEALTH.

AT an emergency meeting of the Medical Council of the People's League of Health, held at their headquarters, 12, Stratford-place, W. 1, it was resolved that a letter should be sent to the Council of the British Empire Cancer Campaign welcoming the establishment of that body, and suggesting a meeting of representatives of that council and members of the Medical Council of the People's League of Health, with the object of determining in what way the League could coöperate in the important work, the resolution passed by the council being: "That in view of the prevalence of cancer, the People's League of Health urges that a cancer survey of Great Britain would be advisable." In July, 1920, the subject of an international cancer survey was discussed by the Medical Council of the League. In view of the great financial stringency prevailing at that time consequent upon the war it was then decided that further action should be postponed. It is on an international basis, through the organisations and institutions with which the League is in touch in India, China, Japan, Australia, Italy, France, Belgium, Czecho-Slovakia, and the United States of America, that the People's League of Health is hoping to be of use to the Council of the British Empire Cancer Campaign.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, July 12th.

DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases will be shown.

Tuesday, July 17th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for election to the Fellowship.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES, 1, Wimpole-street, W.
WEDNESDAY, July 11th.—5.30 P.M., Mr. H. S. Souttar: The Surgery of Intracranial Tumours.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, July 9th.—10 A.M., Mr. Maingot: Surgical Pathology. 2.30 P.M., Dr. Saunders: Medical Wards. 3 P.M., Mr. Simson: Diseases of Women.
TUESDAY.—10 A.M., Mr. Steadman: Dental Dept. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12.15 P.M., Dr. Burnford: Medical Pathology. 3 P.M., Dr. Pernet: Skin Dept.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 2 P.M., Mr. Bishop Harman: Eye Dept. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 11 A.M., Dr. McDougal: Electrical Dept. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham, S.W.
THURSDAY, July 12th.—4.30 P.M.: Dr. R. Worth: Demonstration of Mental Cases at the Springfield Mental Hospital.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Demonstration of Clinical Cases at 3.30 P.M.
MONDAY, July 9th.—Medical: Dr. J. Browning Alexander.
TUESDAY.—(3 P.M.) Surgical: Mr. Howell Evans.
WEDNESDAY.—Eye Cases: Mr. Norman B. B. Fleming.
THURSDAY.—Surgical: Mr. H. W. Carson.
FRIDAY.—Diseases of Children: Dr. C. E. Sundell.

LONDON HOSPITAL MEDICAL COLLEGE, Mile End, E.
WEDNESDAY, July 11th.—4.15 P.M., Dr. W. M. Feldman: The Physiology of the Infant.
FRIDAY.—4.15 P.M., Mr. H. S. Souttar: Intracranial Tumours.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, July 12th.—4 P.M., Dr. Pearson: Indigestion after Infancy.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
THURSDAY, July 12th.—5 P.M., Mr. L. C. Rivett: Stillbirth.